SAMPLING AND ANALYSIS PLAN

FOR

FINCANTIERI MARINETTE MARINE
BUILDING 34-35
ENVIRONMENTAL TESTING

February 2021

Coleman
Engineering

Civil Engineering • Environmental Engineering
Geotechnical Engineering • Land Surveying • Test Drilling
Construction Quality Control • Materials Laboratory Testing

February 10, 2021

Mr. Luke Oberdorfer
Project Manager
Miron Construction CO., Inc.
1471 McMahon Drive Neenah, WI 54956
Luke.Oberdorfer@Miron-Construction.com

Re: Fincantieri Marinette Marine Building 34-35
Environmental Sampling and Analysis Plan

Dear Mr. Oberdorfer:

Attached is Coleman Engineering Company's Sampling and Analysis Plan for Fincantieri Marinette Marine Building 34-35 Environmental testing.

If you should have any questions, please contact me at 906-932-5048 or via email gstengard@coleman-engineering.com.

Sincerely,

COLEMAN ENGINEERING COMPANY

Garth C. Stengard

Garth C. Stengard, P.E.
Geotechnical Engineering Manager

GCS/ks

CEC Project #EE 210170

Environmental Sampling Protocol for Soil Borings at Fincantieri Marinette Marine for Buildings 34 and 35 Layout and Foundations.

PAGE NO.

APPENDICES

1.0 INTRODUCTION

This document defines procedures to be used for collecting and handling of soil samples obtained for the Fincantieri Marinette Marine (FMM) Buildings 34 and 35 construction. Deviations from these procedures may be required by unforeseen circumstances that develop during the program. Such deviations will be approved by the Miron Construction Project Managers or Owner's Representative in advance of sampling. When approvals cannot be obtained in advance, deviations from the established procedures will be evaluated as soon as possible after sampling and needs for re-sampling will be evaluated. Deviations from the specified procedures will be clearly noted on the field notes or the sampling information form (SIF) used for documenting the frequency of sampling at each location and will be included in the Sampling and Analysis (final) as described below.

2.0 ADVANCE PREPARATION FOR SAMPLING

Selection of analytical parameters, field measurement and sampling techniques, equipment selection and other quality assurance measures are based on the sampling objectives presented in Addendum Number 1, Appendix A of the project specifications.

2.1 Selection of Analytical Parameters

Analytical parameters were selected based on regulatory requirements and a review of site history. Samples will be collected and analyzed for the parameters specified in Addendum Number 1, Appendix A of the project specifications. The list of tests is included in Appendix A of this document.

2.2 Detection Limits

Minimum detection levels are shown in Addendum Number 1, Appendix A of the project specifications. In all cases, these detection limits are at or below applicable action levels. The detection limits are presented in Appendix A of this plan.

2.3 Quality Assurance for Field Procedures

Particular care will be exercised to avoid the following common ways in which cross contamination or background contamination may compromise soil samples:

- Improper storage or transportation of equipment;
- Contaminating the equipment or sample bottles on site by setting them on or near potential contamination sources such as uncovered ground, a contaminated vehicle, or vehicle exhaust;
- Handling bottles or equipment with dirty hands or gloves.

Special care will be exercised to prevent cross-contamination of sampling equipment, sampling bottles, or other procedures that could potentially compromise the integrity of samples. Field methods quality assurance verification procedures are described in Section 4.4, "Field Blanks, Replicates and Split Samples." Field personnel will work under the assumption that contamination exists in land surface soil and vegetation near sampling points, wash water, etc. Therefore, exposure to these media will be minimized by taking at least the following precautions:

- Minimizing the amount of rinse water left on washed materials;
- Minimizing the time sampling containers are exposed to airborne dust or volatile contaminants in ambient air; and,
- Placing equipment on clean, ground-covering materials instead of on the land surface.

Clean gloves made of appropriately inert material will be worn by all field personnel. Gloves will be kept clean while handling sampling-related materials. The gloves will be replaced by a new pair when soiled and between each sampling site.

2.4 Sampling Containers and Preservatives

Laboratory-supplied sampling containers and preservatives are to be used for samples from all boring locations. Coleman Engineering Company (CEC) is responsible for ensuring that all sample collection containers are appropriate for the analysis and detection levels required. Chemical preservatives will be added if required before samples are collected.

2.5 Sampling Equipment

CEC will provide soil sampling equipment to be used during the project. The list shall include the following;

- Two-inch nominal diameter Macro- cores with appropriate liners
- Geo-Probe Direct Push Sampling rig

CEC shall provide representative equipment descriptions and specification details prior to initiating field work.

2.6 Decontamination, Storage and Transport of Equipment.

All sampling-related equipment including personal protection gear and materials coming into contact with actual sampling equipment or with sampling personnel will be decontaminated. Decontamination will be performed before, and after working at each sampling point. All equipment will be handled in a manner that will minimize cross-contamination between sample borings or grabs and avoid introducing surface or ambient contamination to include any potential PFOA and PFAS exposure. After cleaning, the equipment will be visibly inspected to detect sticky residues or other substances that may survive normal cleaning. If inspection reveals that decontamination was insufficient, additional measures will be implemented as needed.

Decontamination procedures will be specific to CEC's Sampling Plan. CEC will provide decontamination schedules and procedures. In general, equipment will be decontaminated in the following manner:

Special care will be exercised to ensure that the "rinse" fluids will be circulated in sufficient quantities to completely flush out contaminants, detergents, and desorbing agents.

When transporting or storing equipment after cleaning, the equipment will be protected in a manner that minimizes the potential for contamination.

2.7 Selection of Sample Collection Techniques

Sample collection techniques as detailed in this document have been tailored to the goals of this sampling event and the individual characteristics of this site. The techniques described herein are scientifically sound and widely used in this industry.

The selected option for sample collection will be direct push sampling with a Geoprobe drill unit. The sampler will be a sleeved 5-foot Macro-core sampler advanced at 5 foot depth increments. Each core will be combined and sampled as a composite sample per increment.

The number of sample points for the sample collection method has been determined to be forty-seven (47) borings in the Building 34 and five (5) borings in Building 35 at an equally spaced grid pattern across the layout of the buildings to a depth of 5 feet.

Of the fifty-two (52) borings, thirty-three (33) borings will be extended below groundwater or to a maximum depth of about 10 feet below the existing ground surface. These deep borings will be composited and tested for the same parameters as the upper or dry samples to include the wet testing parameters for PFAS and PFOS stated in Addendum Number 1, Appendix A of the project specifications. The boring locations are listed in Appendix B of this document.

2.8 Order of Sampling

Borings or grab samples will be sampled in a logical order. All borings of one type will be collected and identified before the next set or location is sampled.

3.0 PRELIMINARY FIELD WORK

The following procedures will be implemented to ensure representativeness of samples collected by methods in Section 4, “Sample Collection.”

3.1 Field Inspections and Field Decisions

The condition of any relevant facts regarding the general physical condition of the boring, grab sample, the surrounding soil and vegetation or other objects in the immediate vicinity of the boring will be inspected. Any unusual condition, including the presence of wind-blown dust or odor in the ambient air will be recorded on the daily field notes or boring logs. Details will be noted in the field sampling log and summarized in the field notes or sampling and analysis descriptions. More specifically, any hint of odor or free product in the boring will be noted on the boring logs. If any condition that may interfere with obtaining representative analytical results is discovered, the condition will be rectified before sampling proceeds. The decision and exact change of procedure will be recorded on the daily field notes and reported in a manner that clearly indicates which data sets may have been affected by the change in protocol.

3.2 Detection of Immiscible Layers

Miron Construction or the Owners representative shall be notified as soon as possible if immiscible layers of contaminants (Non- aqueous phase liquid (NAPL) "floaters" or "sinkers") are suspected or seen or if odors or an oil sheen are observed on sampling equipment. Any detection of an immiscible layer shall be documented.

4.0 SAMPLE COLLECTION

This section describes procedures for sampling soil samples. The Macro-core samples will be transported to the Iron Mountain laboratory for processing. Field data for these items will be recorded on the SIF for each sampling point.

4.1 Filling Sample Containers

Individually prepared bottles will not be opened until they are to be filled with soil samples. Special care will be taken to ensure that the procedures listed below are followed:

1. The laboratory will be kept as clean as practical to minimize the potential for contamination of samples.

2. Care will be exercised to minimize the potential for airborne contamination of sample during collection. If conditions are dusty, an effort will be made to shield the sample collection area from windborne contamination.

3. If materials used in the sampling process must be put down, they will be placed on a clean portion of a plastic sheet.

4. A clean pair of gloves will be put on at the onset of sampling activities.

5. Sampling personnel will keep their hands as clean as practical and replace gloves if they become soiled while performing sampling activities.

6. Sampling personnel will not touch the inside of sampling containers, inside of bottle caps or rim of sample containers. If contact occurs, sample containers will be replaced.

In the laboratory, <u>bottles will be labeled and chain-of-custody sections will be filled out</u> by the personnel according to procedures described below in Section 5: “Documentation of Sampling Event.” To prevent a mix up with sample bottle identification, no sampling-point specific information such as boring number will be filled out in advance. Chain of custody information will be completed before leaving the sampling point. Laboratory-prepared bottles will be used to assure quality control.

Methods for filling sample containers for individual analyses are described below.

- ***General/PFAS/PFOA***

Methods for sample collection and filling sample containers for PFOA and PFAS will be followed according to Michigan (EAGLE) recommendations referred to in Appendix C of this document.

4.2 Field Blanks, Replicate and Split Samples

Sample blanks, will be collected to detect background or method cross contamination. Replicate samples and split samples will be collected to evaluate variability in analytical methods. QA/QC samples will be collected at sampling points suspected to have relatively higher levels of contamination to provide meaningful information duplicate sample evaluation. All QA/QC samples will be collected in the same type of container as the corresponding primary samples. All QA/QC samples will be assigned identification aliases on the sample bottle label and on the chain of custody sheet to avoid alerting laboratories that the sample is a blank or replicate sample. The true identity of the QA/QC samples will be recorded in the field sampling log.

The collection schedule for QA/QC samples will be as follows:

1. One field method (equipment) blanks every other sampling trip.
2. One replicate set for every ten (10) sets of samples collected if required.

For each type of QA/QC sample, containers will be prepared and submitted for the following analyses:

1. Field methods (equipment) blank: trace metals, non-volatile organics.
2. Replicates: all analytical parameters.

- **Field Blank Samples**

Field equipment/methods blanks will be collected in the field for trace metals and non-volatile organics. Sample containers used for each blank will be the same as for the actual analysis of for these parameter groups. All containers shall be pre-cleaned within the laboratory's QA/QC program in the same manner as primary sample bottles.

- **Field Replicate Samples (If Required)**

A field replicate sample of soil will be collected and analyzed for the same parameters as the primary samples. Replicate samples will be collected for 10% of the primary samples collected. Replicate samples will be collected by sequentially filling all containers as close together in time as practical with a sampling procedure that is as steady and continuous as practical. The sequence number (first, second, etc.) and time filled will be listed in the field notebook. The time that each individual container was filled will be listed on the container and on the Sample Identification - field chain of Custody Record in the same manner as primary samples. One field replicate sample set will be collected for every ten primary sampling sets.

5.0 DOCUMENTATION OF SAMPLING EVENT

This sampling protocol includes the use of the attached forms in Appendix D of this document; they are designed for documentation of field activities and collection of field data. They also provide a means to verify whether or not this protocol was followed during a number of key steps in the soil sampling event. To fully implement the protocol verification facility of these forms, all entries on both sides of the forms will be completed before leaving the sampling point. This includes filling in all blanks and circling or checking all choices, e.g., "yes" or "no" choices on the following forms:

1. Boring Log Data Form
2. Daily Field Sampling Inspection form
4. Laboratory Chain of Custody (LCOC)

The following exceptions are allowed on all forms:

- Columns with blank headings don't require an entry.
- Ditto marks or continuation arrows may be used in any column to indicate "same as above"; N/A or a horizontal line may be used to indicate "not applicable."
- "Comment" fields may be filled in with a horizontal line to imply that nothing that could impact data or the validity of data was observed.
- The Project Name/# and Organization performing the work can be entered in advance.
- The fields "Facility ID" and Station ID" can be filled out after leaving the sampling point.

5.1 Sample Identification

The attached LCOC provided from the Analytical Laboratory will be completed as described above in Section 5.0, “Documentation of Sampling Event.”

The LCOC will be at least a two-part (carbonless copy) form.

Each LCOC will contain a unique record number printed in the upper margin on the right side of the form. Each row in the LCOC will contain the name of the sample point with the date and time of the sample. Each type of analysis required will be checked under the appropriate method.

Each sample container will be labeled with the following information using a waterproof marker on firmly affixed, water-resistant labels:

- Unique Location Information (Example B-1) ;
- sample collection Date;

- sample collection time;
- initials of person collecting sample;
- analyses required on pre-printed label;
- preservation method specified on pre-printed label when preserved at lab; and,
- sampling organization name on a pre-printed label.

Container information will be entered at the sampling point at the time of sample collection with the following exceptions:

- For containers receiving preservatives in advance, "analyses required" and "preservation method" will be entered onto labels by laboratory staff.
- For containers receiving preservatives in the field, "preservation method" will be entered at the time individual containers are filled.

5.2 Chain of Custody

A LCOC will be initiated in the field at the time of sampling; a copy will accompany each set of samples (cooler) shipped to the designated laboratory.

Each time responsibility for custody of the sample's changes, the new and previous custodians will sign the record and denote the date and time. A copy of the signed record will be made by the receiving laboratory. The final signed SI-FCCR will be submitted with analytical results.

- **Field Chain of Custody Documentation**

All signatures related to sample custody will be made in ink on the LCOC in a timely fashion. One or more signatures will be entered to identify the person or persons who are collecting the samples. Each time the custody of a sample or group of samples is transferred, a signature, date and time will be entered to document the transfer. The signatures, date and time will be entered at the time of transfer; the row # will be used to define which bottles were transferred. A sample will be considered to be in custody if it is in any one of the following states:

1. In actual physical possession.
2. In view, after being in physical possession.
3. In physical possession and locked up so that no one can tamper with it.
4. In a secured area, restricted to authorized personnel.

A secured area such as a locked storage shed or locked vehicle specified in the "comments" column, may be used for temporary storage. When using such an area, the time, date, and location of the secured area will be recorded in the "relinquished by" space. The time at which an individual regains custody will then be recorded in the "received by" space.

- **Chain of Custody during Shipping and Transfer of Samples**

When samples are shipped, the person sealing the shipping container will enter the time, date and their signature on the LCOC. The laboratory part of the LCOC will be enclosed in the container;

the top page (first part) will be retained for the project manager's file. A post office receipt, bill of lading, or similar document from the shipper will be retained as part of the permanent chain-of-custody documentation.

One or more custody seals will be affixed over the opening of the shipping container in a manner that precludes opening the container without breaking the seal(s). The laboratory will be instructed to note whether or not the container seal(s) are intact and sign in the appropriate blank on the LCOC at the time of receipt. They will also be instructed to keep a copy and return the original form to the client with the analysis results.

5.3 Field Sampling Log

A daily field sampling log of sampling activities will be kept by the leader of the field sampling crew. This record or log will supplement information. At a minimum, the log will contain a record of the following items:

- List of field personnel present;
- Field conditions as described below in Section 5.5, "Field Conditions";
- A summary of how samples were transferred/transported to laboratories;
- Description of exceptions to this protocol including specification of which samples may have been impacted by exception(s) (see below); and, for each boring sampled

    -the unique LCOC # used to identify samples
    -date and time that sampling began and ended
    -list of primary and QA/QC samples sent to each laboratory
    -any alias cross-reference list for QA/QC samples.

5.4 Exceptions to Sampling Protocol

This protocol defines the procedures to be, followed during this sampling event. Exceptions to this protocol will be noted and detailed in the Field Sampling Log (see above). The section titled "Exceptions to Protocol".

- The reason for the exception;
- The identification of all samples and individual parameters that may have been impacted either in terms of the quantitative or legal integrity of their reported values; and,
- The significance of the potential impacts to the integrity of each parameter for each sample.

If there has been any potentially significant impact on sample integrity, then the potential impact for each parameter for each sample affected will be footnoted whenever the results are reported or referred to in the Sampling and Analysis Report.

5.5 Field Conditions

Field conditions during the sampling event will be recorded on the Daily Field and will include a statement regarding the likelihood that any unusual field conditions had a significant impact on the integrity of results. Field conditions reported will include but not be limited to the following:

- air temperature
- wind speed
- precipitation/moisture
- ambient odors
- airborne dust

6.0 SAMPLE PRESERVATION, HANDLING AND TRANSPORT

This section describes procedures that will be followed between the time samples are collected and the time they are either shipped or delivered to an analytical laboratory.

6.1 Sample Preservation

Samples will be preserved as shown on Table 3 in Appendix C of this document. All Chemical preservatives, added to containers in the laboratory or field will be produced and controlled within the laboratory's QA/QC program.

All samples will be thermally preserved in the field immediately after sample collection by placing the samples in cooler (Regular ice may be used). If so, particular care will be taken to assure that paper work and sample labels are not damaged by water. The regular ice will be placed inside uncontaminated leak-proof plastic containers and the chain of custody record will be placed inside a Zip Lock bag.

6.2 Sample Handling and Transport

All ice chests shipped will be accompanied by an LCOC form and contain a complete address and return address both inside and out. The samples will be kept at approximately 4 degrees C during transport to laboratories. Before transporting samples, CEC personnel will perform the following tasks:

1. Verify that laboratory personnel will be present to receive samples when they arrive.
2. Verify that laboratory personnel understand chain of custody and sample storage/preservation requirements.
3. Check labeling and documentation to ensure sample identity will be clear to laboratory personnel.
4. Hand delivers or ship samples in a manner that ensures samples will remain cool (about 4 degrees Celsius) until received by laboratory personnel.
5. Maintain the chain-of-custody according to procedures described above.

APPENDIX A

SCOPE OF WORK

Appendix A

Draft FMM Building 34-35 Construction Related Soils and Groundwater Management Requirements

Background

The proposed construction area for Buildings 34 & 35 on the FMM property was historically low lying and has been subsequently raised over the years with fill to bring it to its current grade elevation. For several years this area has been paved and used for employee parking. In October 2020, Foth, on behalf of FMM, collected soil and groundwater samples to characterize the material for management during construction activities. A figure depicting the boring locations, and tables summarizing the soil and groundwater analytic information are provided. The soil sample results in the tables represent unsaturated material composited at each location from beneath the asphalt/gravel base course to depths of approximately four to five feet. These samples were analytically tested for Waste Management (WM) testing parameters for waste characterization. Groundwater samples were collected for these same parameters as well as PFAS compounds, as required by the Wisconsin Department of Natural Resources (WDNR) prior to approving any construction related dewatering in the city of Marinette.

Soils:

Analytical soil results for boring GP-3 and extending to GP-13 contain elevated arsenic concentrations greater than the Michigan statewide default background value of 5.8 parts per million (PPM) and the groundwater protection criteria value of 4.6 PPM. These materials have an approved WM waste profile for disposal within the WM landfill at Menominee, MI. A waste profile to use the remaining material for daily cover is currently under review. Dan Roddan of WM will provide unit rates for trucking and disposal of this material.

Groundwater:

Based on groundwater quality testing, the groundwater contains arsenic and the PFAS chemicals PFOA and PFOS at levels exceeding surface water discharge limits for the Menominee River and WDNR groundwater discharge limits. <u>As such, any water generated during active dewatering activities must be treated prior to discharge.</u>

Groundwater elevations across the construction area were calculated at approximately 582 feet NAVD 1988 at the north end, to 582.5 feet in the central portion to 585 feet at the southern end using monitoring wells constructed for this characterization process. See attached Figure.

Construction Requirements:

All groundwater and soil samples must be collected by a qualified individual per Wisconsin Administrative Code (WAC) NR 712. This is typically someone with an environmental consulting or engineering firm.

All environmental information collected during the course of this construction shall be provided to Owner, Foth, and Graef immediately upon collection, upon receipt of analytic reports, or in the case of landfill weight slips, weekly. This list should not be construed to be the entire list of contractor required project submittals.

Appendix A (continued)

Soil and Asphalt/Base Course Management

1) The WDNR does not regulate the reuse of the asphalt/base course gravel removed in preparation for construction activities: therefore, the asphalt and base course gravel may be recycled, reused on site, or taken off site as the Contractor deems appropriate.
2) The monitoring wells GW-1, GW-3, GW-4, GW-6, installed for this project, may be abandoned by removal with an excavator. A qualified profession per WAC NR 712 should oversee the abandonment. Contractor will complete a WDNR Form 3300-005 Well/Drillhole/Borehole Filling & Sealing Report for each abandoned well. The form can be found on the web. The forms should be provided to Owner and Foth for review and submittal to the WDNR. Please report date of abandonment to Owner and Foth.
3) The 585 foot groundwater surface elevation at the south end of the construction area, as recorded for monitoring well GP-1W, is unusually high and may represent a perched water table created by surface water ponding in a road side ditch to the south. Soil moisture conditions and depth to groundwater should be checked at the start of construction with test pits approximately six to seven feet deep. The locations should be horizontally and vertically surveyed, soil moisture conditions noted, and water level depths, or lack thereof recorded. The survey information and water depth observations should be provided to Owner, Graef and Foth within 24 hours of completion. If the actual water table elevation is lower along the southern end of the construction site than what is portrayed at GP-1W it will allow for an adjustment of the soil volumes noted below for Items 5 & 8 below.
4) To limit the volume of material placed in the landfill due to arsenic concentrations (GP-3/GP-13) versus used for daily cover (lower unit price for daily cover material), a limited test pit investigation is necessary as soon as the asphalt and subbase material has been cleared from this area. Suggested test pit locations are shown on the drawing prepared by Graef. The material at each test pit location, excavated to a depth of approximately five feet, should be well composited and then submitted to an analytical laboratory for arsenic testing. Arsenic concentrations must be less than the State of Michigan default background concentration of 5.8 parts per million (PPM) and the groundwater protection criteria value of 4.6 PPM to have adequately defined the horizontal extent of this material. Confirmation samples define the boundary of soils to be disposed inside the landfill versus used at the landfill for daily cover or other uses as noted in Item #5. For preliminary estimation purposes, this volume is 2,010 cubic yards (CY). A summary of the test pit investigation work, including dates of completion, depths, test pit coordinates, and analytical results must be provided to Owner, Graef and Foth for review and concurrence on the horizontal limits of the arsenic impacted soils.
5) The remaining soils excavated down to the established water table cut off elevation, as defined in the background information, will be hauled to WM's Menominee MI landfill for use as daily cover or for other uses within the landfill. The estimated volume of this material, based on best available information provided by Graef, is 41,310 CY.
6) During excavation, the Contractor's operator shall, as a normal practice, observe the excavated material for physical indications of environmental contamination or suspicious materials. Physical indications of environmental contamination would include petroleum odors, organic odors, staining, a rainbow sheen on the water, or free-phase product to name the most common ones. Suspicious materials would include such things as demolition debris, wood, drums, tires, tanks, metallic objects, etc. Any such observances should be reported immediately to the Owner's EHS department.

   Soils suspected to have environmental contamination, or the presence of suspicious materials, shall be segregated from the other excavated material pending further assessment.

Special handling may include, but not be limited to, stockpiling or containerizing the material away from material classified for general offsite beneficial use or disposal and covering as appropriate to prevent run off during rain storms with discharge to storm drains or the Menominee River, either directly or directly, until such time as it can be tested to meet disposal facility requirements, removed by Contractor and transported by Contractor to a licensed disposal facility.

7) It is FMM's desire that Contractor retain as much excavated material on site as possible to reduce WM costs. Graef has estimated that approximately 1,400 CY of material can be placed beneath the Building 35 slab as non-structural fill and an additional 12,900 CY of material can potentially be used beneath the Building 34 slab and as backfill around the building.
8) Soils excavated below the groundwater have not been characterized for disposal off site and must be separated from those excavated above the watertable. Graef estimates the volume of this material is approximately 7,700 CY. The present FMM position is that these soils will be re-used on site for nonstructural fill. Contractor is allowed to let soils naturally drain to the open earth of the excavation. See No. 9 & 11 below for testing requirements.
9) To reuse soils on-site as nonstructural fill, the WDNR requires per WAC NR 718 that composite soil samples much be collected and tested at a frequency of one composite sample per 100 CY for the first six hundred CY of material and one composite soil sample per every 300 CY thereafter. A WDNR exemption request to reuse soils on-site is in process and includes a request for a reduced sampling frequency as well as a list of recommended test parameters. Contractor will be notified upon receipt of the exemption approval. For preliminary estimation purposes, assume that all soils from above the water table will be tested for petroleum volatile organic compounds (PVOCs), polycyclic aromatic hydrocarbons (PAHs), RCRA metals and PCBs. In addition to these parameters, the WDNR may require composite samples of material from below the water table to be tested for PFOA and PFOS. The WDNR may adjust these sampling parameters and the sampling frequency as part of the approval process. Data reporting requirements for the WDNR will be transmitted upon receipt of the approved WDNR Exemption request. Contractor shall prepare a soil sampling plan for review by Owner, Graef and Foth that will outline the procedures for collecting composite soil samples from the soil volumes mandated for testing by the WDNR's approval to use soils on site. This could be at a rate of one sample per 300 CY or greater.
10) Per WAC NR 712, until the WDNR has issued an approval to the exemption request to use materials on site, materials may be excavated and stockpiled, but not placed in new areas on site. Composite testing should not be performed until the WDNR approval has been received without first consulting with Owner and Foth.
11) If saturated soils excavated as part of No. 8 above must go off site, they should be tested for PVOCs, PAHs, RCRA metals, PCBs, and possibly the PFAS chemicals PFOA and PFOS. Based on the test results, WM may accept the material under an existing waste profile or may require submittal of a separate profile application.
12) Miron and their subs must notify the owner and its representatives of any intent to test soils for parameters not approved by the WDNR for reuse of soils on site, or for additional parameters requested by Waste Management beyond the test parameters already performed.

Groundwater

1) It is client's first preference that Contractor undertake construction activities in such a way that groundwater does need not be pumped. When pumping is necessary, groundwater generated during active construction dewatering activities shall be collected and treated prior to discharge off-site to surface water by Contractor or a qualified subcontractor to address arsenic, PFOS and

PFOA impacts. Owner will not assume this responsibility. A WDNR WPDES general permit for Contaminated Groundwater From Remedial Action Operations (WI-0046566-07-0) is required for discharge. Foth will prepare a permit application once the system details and location are established.

2) It may be possible to transport the water to a system set up at Marinette Fuel and Dock for treatment of carriage water from sediment dewatering for FMM projects. Contact Warren Netzow or Ed Swanson of FMM for details.
3) Contractor or a designated subcontractor will be responsible for storage of groundwater, if collected, transportation if appropriate, system operation costs, including but not limited to, preparation of a PE signed engineering design report for the system, analytic testing and reporting. For estimation purposes, assume analytic testing will likely be required for RCRA metals, PAHs (list of 18) PFOA and PFOS at system intake and discharge during periodic discharge events, or weekly if continuous treatment and discharge. The WDNR may adjust these sampling parameters and the sampling frequency as part of the approval process. WDNR has indicated that an application review will take approximately two to three weeks once a system and system location has been scoped out.
4) As established through discussions with the WDNR, groundwater generated passively, such as during pile driving, or dewatering of soils excavated below the water table, is not a permit regulated activity. Groundwater that is allowed to drain from stockpiled soil within the excavation does not require a permit.
5) If necessary and per WDNR, it is acceptable to containerize construction related water generated over the winter and treat it in spring.
6) Other options for management of collected groundwater will be considered, such as solidification or incineration. Offsite treatment with surface water discharge, other than using the system operated at Marinette Fuel and Dock for the sediment portion of the FMM construction activities, will be NOT be accepted by Owner as an option.

Attachments

1. Figure 1 – Soil Boring and Monitoring Well Locations
2. Figure 2 – Groundwater Contour Map (9/29/2020)
3. Table 2 – Soil Analytical Results Compared to WI NR 720 Criteria
4. Table 4 – September 29, 2020 Groundwater Analytical Results

NOTES:
1. Imagery basemap from esri.com, courtesy of the Microsoft Corporation and its data suppliers.
2. Horizontal coordinate system is NAD 1983 Wisconsin State Plane Central, units in feet.

LEGEND

- Foth September 2020 Soil Boring Location
- Foth September 2020 Soil Boring/Monitoring Well Location
- Foth June-July 2020 Boring Location
- Foth 2018 Boring Location
- STS 2010 Boring Location
- Proposed Building Footprint
- Approximate Property Boundary

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only.

FINCANTIERI MARINETTE MARINE

Foth

N

0 60 120 Feet

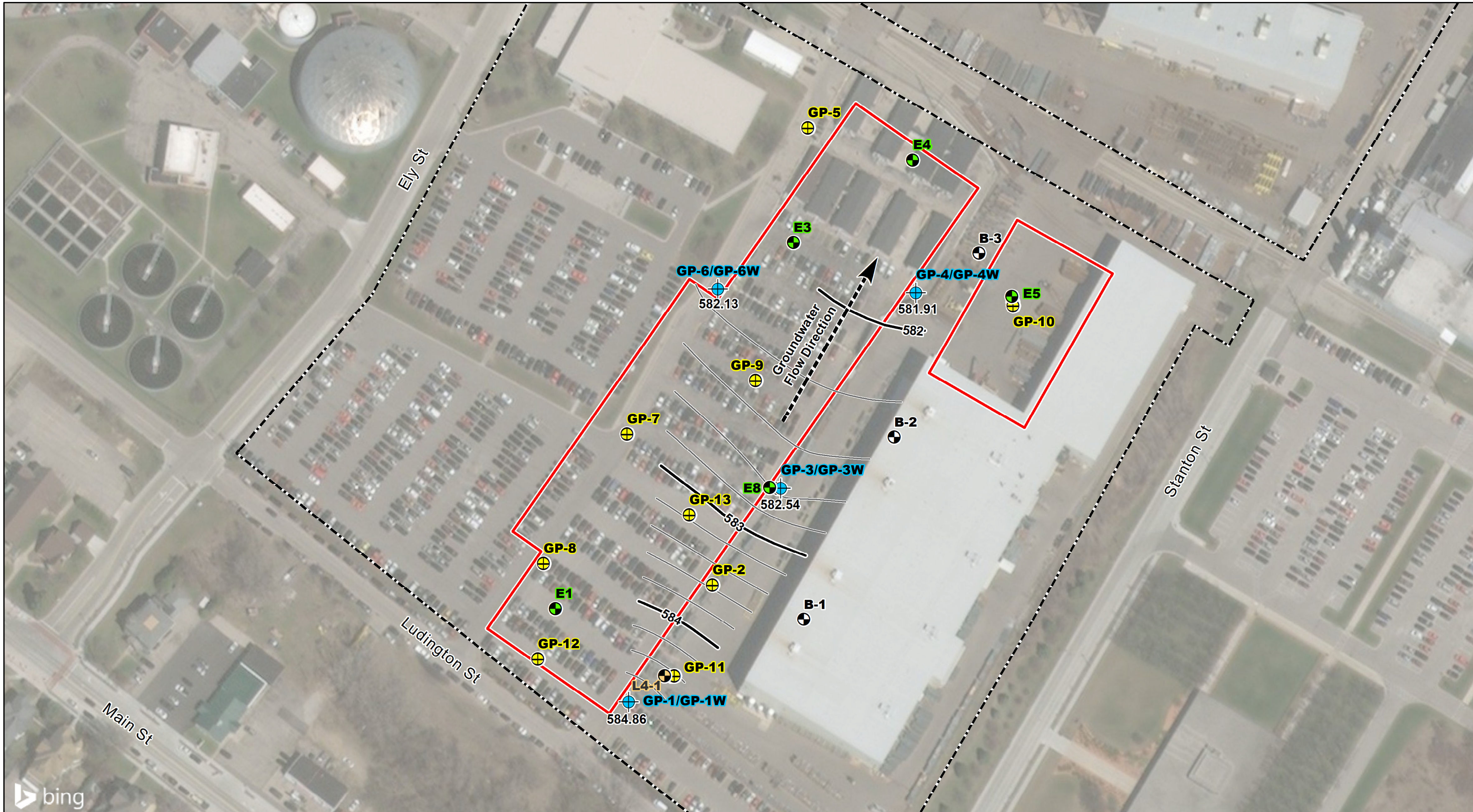
FINCANTIERI MARINETTE MARINE

FIGURE 1

SOIL BORING AND MONITORING WELL LOCATIONS
FINCANTIERI MARINETTE MARINE
1600 ELY STREET
MARINETTE, WI 54143

Date: OCTOBER 2020	Revision Date:	
Drawn By: BJW1	Checked By: RLP1	Project: 19M106

Path: Q:\Marinette Marine Corporation\19M106\GIS\mxd\Supplemental Investigation Memo\Figure 1 -Soil and Monitoring Well Locations.mxd Date: 10/27/2020



NOTES:
1. Imagery basemap from esri.com, courtesy of the Microsoft Corporation and its data suppliers.
2. Horizontal coordinate system is NAD 1983 Wisconsin State Plane Central, units in feet.

LEGEND

- Foth September 2020 Soil Boring
- Foth September 2020 Soil Boring/ Monitoring Well Location
- Foth June-July 2020 Boring Location
- Foth 2018 Boring Location
- STS 2010 Boring Location
- 1' Groundwater Contour
- 0.2' Groundwater Contour
- Proposed Building Footprint
- Approximate Property Boundary

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only.

0 60 120 Feet

N

FINCANTIERI MARINETTE MARINE
Foth

FINCANTIERI MARINETTE MARINE

FIGURE 2
GROUNDWATER CONTOUR MAP (9/29/2020)
FINCANTIERI MARINETTE MARINE
1600 ELY STREET
MARINETTE, WI 54143

Date: OCTOBER 2020	Revision Date:	
Drawn By: BJW1	Checked By: RLP1	Project: 19M106

Path: Q:\Marinette Marine Corporation\19M106\GIS\mxd\Figure 2 -Water Table Contour Map 9-29-2020.mxd Date: 10/27/2020

Table 2
Soil Analytical Results Compared to WI NR 720 Criteria
B34/B35 Supplemental Investigation
Fincantieri Marinette Marine
Marinette, Wisconsin
(Page 1 of 3)

Analysis		WDNR NR 720 Direct Contact RCL[1]	WDNR NR 720 GW Pathway RCL[1]	Units	GP-1, 0.2-5.5'	GP-2, 0.2 - 4.5' UPPER	GP-2, 0.2 - 4.5' LOWER	GP-3, 0.1 - 4.0'	GP-4, 0.0 - 4.0'
ASTM D2974-87	Moisture	N/A	N/A	%	7.4	6.1	9.1	14.0	4.4
EPA 8260 Detected VOCs	Benzene	1600	5.1	ug/kg	<25	<25	<25	152	<25
	Ethylbenzene	8020	1,570	ug/kg	<25	<25	<25	30.1 J	<25
	Chlorobenzene	370000	135.8	ug/kg	<25	<25	<25	<25	<25
	p-Isopropyltoluene	162000	N/A	ug/kg	<25	<25	<25	38.0 J	<25
	1,4-Dichlorobenzene	3740	144.0	ug/kg	<25	<25	<25	53.0 J	<25
	n-Butylbenzene	108000	N/A	ug/kg	<30	<30	<30	<30	<30
	sec-Butylbenzene	145000	N/A	ug/kg	<25	<25	<25	<25	<25
	tert-Butylbenzene	183000	N/A	ug/kg	<25	<25	<25	<25	<25
	Naphthalene	5520	658.2	ug/kg	<27.3	<27.3	69.0 J	35.4 J	<27.3
	Toluene	818000	1,107	ug/kg	<25	<25	<25	67.6 J	<25
	1,2,4-Trimethylbenzene	219000	1378.7	ug/kg	<25	<25	<25	<25	<25
	1,3,5-Trimethylbenzene	182000		ug/kg	<25	<25	<25	<25	<25
	m&p-Xylene	260000	3960	ug/kg	<50	<50	<50	77.2 J	<50
	o-Xylene			ug/kg	<25	<25	<25	42.1 J	<25
EPA 6020 Metals	Arsenic	8.3[2]	8.3[2]	mg/kg	4.3	3.4	6.4	325	2.6
	Barium	15,300	164.8	mg/kg	25.4	14.2	255	160	15.4
	Cadmium	71.1	0.752	mg/kg	0.55 J	<0.098	0.42 J	1.4	0.29J
	Chromium	43.5[2]	43.5[2]	mg/kg	10.4	7.9	10.0	32.4	9.6
	Copper	3,130	91.6	mg/kg	23.5	17.0	40.3	366	33.6
	Lead	400	27	mg/kg	18.2	26.9	99.3	304	50.9
	Selenium	391	0.52	mg/kg	0.79	0.21 J	0.78	0.59 J	0.47 J
	Silver	391	0.85	mg/kg	0.23 J	<0.096	0.24 J	0.47	0.11 J
	Zinc	23,500	N/A	mg/kg	62.5	75.4	82.1	537	83.8
EPA 7471	Mercury	3.13	0.208	mg/kg	0.028 J	<0.011	0.069	0.15	0.016 J
EPA 6010 TCLP	Arsenic	NA	NA	mg/L	NT	NT	NT	0.056	NT
	Lead	NA	NA	mg/L	NT	NT	NT	0.097	NT
EPA 6020 Water Neutral Leach	Lead	NA	NA	mg/L	NT	NT	NT	<0.00024	NT
	Zinc	NA	NA	mg/L	NT	NT	NT	<0.010	NT
EPA 8081 Pesticides	Aldrin	40	N/A	ug/kg	<28.6	<5.6	<29.4	<6.2	<5.6
	alpha-BHC	86	N/A	ug/kg	<12.2	<2.4	<12.6	<2.7	<2.4
	beta-BHC	301	N/A	ug/kg	<20.5	<4.1	<21.1	<4.4	<4.0
	delta-BHC	N/A	N/A	ug/kg	<15.6	<3.1	<16.0	<3.4	<3.0
	gamma-BHC (Lindane)	568	2.3	ug/kg	<11.3	<2.2	<11.6	<2.5	<2.2
	Chlordane	1,740	542	ug/kg	<295	<58.1	<303	<63.8	<57.2
	alpha-Chlordane	N/A	N/A	ug/kg	<12.3	<2.4	<12.7	<2.7	<2.4
	gamma-Chlordane	N/A	N/A	ug/kg	<28.7	<5.7	<29.5	<6.2	<5.6
	4,4'-DDD	1900	N/A	ug/kg	<20.7	<4.1	<21.3	9.7 J	<4.0
	4,4'-DDE	2,000	N/A	ug/kg	<19.4	<3.8	<19.9	11.5 J	<3.8
	4,4'-DDT	1,890	N/A	ug/kg	<43.6	<8.6	<44.8	<9.4	<8.5
	Dieldrin	34	N/A	ug/kg	<18.6	4.9 J	<19.1	5.2 J	<3.6
	Endosulfan I	N/A	N/A	ug/kg	<14.9	<2.9	<15.3	<3.2	<2.9
	Endosulfan II	N/A	N/A	ug/kg	<29.6	<5.8	<30.4	<6.4	<5.8
	Endosulfan sulfate	N/A	N/A	ug/kg	<35.8	<7.1	<36.7	<7.7	<7.0
	Endrin	19,000	162	ug/kg	<20.4	<4.0	<20.9	<4.4	<4.0
	Endrin aldehyde	N/A	N/A	ug/kg	<40.2	<7.9	<41.4	<8.7	<7.8
	Endrin ketone	N/A	N/A	ug/kg	<49.4	<9.8	<50.8	<10.7	<9.6
	Heptachlor	140	66.2	ug/kg	<20.1	<4.0	<20.7	<4.4	<3.9
	Heptachlor epoxide	72	8.2	ug/kg	<13.8	<2.7	<14.2	<3.0	<2.7
	Methoxychlor	316000	4320	ug/kg	<295	<58.3	<303	<63.9	<57.4
	Toxaphene	493	928	ug/kg	<791	<156	<813	<171	<154
EPA 8082A	PCBs - Total	N/A	9.4	ug/kg	22.6 J	22.7 J	62.1	141	21.8 J
	PCBs - Aroclor 1016	4,110	N/A	ug/kg	<16.4	<16.2	<16.7	<17.7	<16.0
	PCBs - Aroclor 1221	213	N/A	ug/kg	<16.4	<16.2	<16.7	<17.7	<16.0
	PCBs - Aroclor 1232	190	N/A	ug/kg	<16.4	<16.2	<16.7	<17.7	<16.0
	PCBs - Aroclor 1242	235	N/A	ug/kg	<16.4	<16.2	<16.7	22.2 J	<16.0
	PCBs - Aroclor 1248	236	N/A	ug/kg	<16.4	<16.2	<16.7	<17.7	<16.0
	PCBs - Aroclor 1254	239	N/A	ug/kg	22.6 J	22.7 J	40.1 J	62.6	21.8 J
	PCBs - Aroclor 1260	243	N/A	ug/kg	<16.4	<16.2	22.0 J	55.9 J	<16.0
EPA 8270 PAHs	1-Methylnaphthalene	17,600	N/A	ug/kg	25.0 J	16.0 J	163 J	35.7	<25.5
	2-Methylnaphthalene	239,000	N/A	ug/kg	29.4 J	23.0	151 J	52.1	<25.5
	Acenaphthene	3,590,000	N/A	ug/kg	29.8 J	3.4 J	104 J	22.9	<22.7
	Acenaphthylene	N/A	N/A	ug/kg	15.1 J	9.4 J	145 J	24.4	22.1 J
	Anthracene	17,900,000	196,949	ug/kg	35.1 J	15.6 J	356	58.6	114 J
	Benzo(a)anthracene	1,140	N/A	ug/kg	168	64.1	730	172	680
	Benzo(a)pyrene	115	470	ug/kg	254	99.1	909	225	960
	Benzo(b)fluoranthene	1,150	478.1	ug/kg	367	135	1090	339	1410
	Benzo(ghi)perylene	N/A	N/A	ug/kg	169	88.7	673	132	593
	Benzo(k)fluoranthene	11,500	N/A	ug/kg	145	59.0	478	126	537
	Chrysene	115,000	144.2	ug/kg	245	89.2	878	228	951
	Dibenzo(a,h)anthracene	115	N/A	ug/kg	39.9	18.5	172 J	45.4	157 J
	Fluoranthene	2,390,000	88,878	ug/kg	381	131	1540	318	1640
	Fluorene	2,390,000	14,830	ug/kg	17.3 J	4.9 J	182 J	27.6	21.0 J
	Indeno(1,2,3-cd)pyrene	1,150	N/A	ug/kg	139	67.9	501	117	524
	Naphthalene	5,520	658.2	ug/kg	24.4 J	19.3	182 J	118	<17.0
	Phenanthrene	N/A	N/A	ug/kg	138	46.6	1020	220	520
	Pyrene	1,790,000	54,546	ug/kg	283	100	1190	236	1200

Notes:
< = Parameter not detected at or above the laboratory detection limit shown.
J = Estimated concentration at or above the Limit of Detection (LOD) and below the Limit of Quantitation (LOQ).
N/A = Not available
NT = Not Tested
VOC = Volatile organic compound
TCLP = Toxicity characteristic leaching procedure
PAH = Polycyclic aromatic hydrocarbons
PCB = Polychlorinated biphenyls
2.0 = Concentration above WDNR Residential Direct Contact Residual Contaminant Level (RCL).
1.1 = Concentration above WDNR Groundwater Pathway RCL.
1= WDNR Residential Direct Contact and Groundwater Pathway RCLs from WDNR online RCL Excel Spreadsheet, updated December 2018. DF=2 for GW RCL.
2= Statewide background threshold values used in the WDNR online RCL Excel spreadsheet are referenced as non-outlier trace element maximum levels in Wisconsin surface soils from the USGS Report at: *http://pubs.usgs.gov/sir/2011/5202* . See also WDNR Publication RR-940.

Prepared by: RLP1
Checked by: RJM7

Table 2
Soil Analytical Results Compared to WI NR 720 Criteria
B34/B35 Supplemental Investigation
Fincantieri Marinette Marine
Marinette, WI
(Page 2 of 3)

Analysis		WDNR NR 720 Direct Contact RCL[1]	WDNR NR 720 GW Pathway RCL[1]	Units	GP-5, 0.2 - 4.0'	GP-6, 0.2 - 5.0'	GP-7, 0.3 - 5.0'	GP-8, 0.3 - 6.5'	GP-9, 0.2 - 4.0'
ASTM D2974-87	Moisture	N/A	N/A	%	5.4	7.5	6.6	8.6	6.4
EPA 8260 Detected VOCs	Benzene	1600	5.1	ug/kg	<25	<25	<25	<25	<25
	Ethylbenzene	8020	1,570	ug/kg	<25	<25	<25	<25	<25
	Chlorobenzene	370000	135.8	ug/kg	<25	<25	<25	<25	<25
	p-Isopropyltoluene	162000	N/A	ug/kg	<25	<25	<25	84.6	<25
	1,4-Dichlorobenzene	3740	144.0	ug/kg	<25	<25	<25	<25	<25
	n-Butylbenzene	108000	N/A	ug/kg	<30	<30	<30	<30	<30
	sec-Butylbenzene	145000	N/A	ug/kg	<25	<25	<25	<25	<25
	tert-Butylbenzene	183000	N/A	ug/kg	<25	<25	<25	<25	<25
	Naphthalene	5520	658.2	ug/kg	67.2 J	<27.3	<27.3	31.4 J	29.3 J
	Toluene	818000	1,107	ug/kg	<25	58.3 J	<25	<25	82.3
	1,2,4-Trimethylbenzene	219000	1378.7	ug/kg	45.0 J	<25	<25	<25	<25
	1,3,5-Trimethylbenzene	182000		ug/kg	<25	<25	<25	<25	<25
	m&p-Xylene	260000	3960	ug/kg	<50	<50	<50	<50	<50
	o-Xylene			ug/kg	<25	<25	<25	<25	33.6 J
EPA 6020 Metals	Arsenic	8.3[2]	8.3[2]	mg/kg	2.2	4.0	3.1	2.8	2.0
	Barium	15,300	164.8	mg/kg	12.1	44.3	16.2	26.4	13.4
	Cadmium	71.1	0.752	mg/kg	0.10 J	0.71 J	0.11 J	0.14 J	<0.099
	Chromium	43.5[2]	43.5[2]	mg/kg	11.7	10.6	9.2	11.5	9.5
	Copper	3,130	91.6	mg/kg	13.1	34.8	20.8	20.5	10
	Lead	400	27	mg/kg	18.0	129	25.1	33.5	18.5
	Selenium	391	0.52	mg/kg	0.34 J	0.55 J	0.34 J	0.36 J	0.34 J
	Silver	391	0.85	mg/kg	<0.096	<0.10	<0.10	<0.10	<0.097
	Zinc	23,500	N/A	mg/kg	60.6	1790	66.8	119	30.9
EPA 7471	Mercury	3.13	0.208	mg/kg	0.015 J	0.070	0.017 J	0.044	0.015 J
EPA 6010 TCLP	Arsenic	NA	NA	mg/L	NT	NT	NT	NT	NT
	Lead	NA	NA	mg/L	NT	0.056	NT	NT	NT
EPA 6020 Water Neutral Leach	Lead	NA	NA	mg/L	NT	<0.00024	NT	NT	NT
	Zinc	NA	NA	mg/L	NT	<0.010	NT	NT	NT
EPA 8081 Pesticides	Aldrin	40	N/A	ug/kg	<5.6	<2.9	<11.3	<29.2	<2.9
	alpha-BHC	86	N/A	ug/kg	<2.4	<1.2	<4.8	<12.5	<1.2
	beta-BHC	301	N/A	ug/kg	<4.0	<2.1	<8.1	<20.9	<2.0
	delta-BHC	N/A	N/A	ug/kg	<3.1	<1.6	<6.2	<15.9	<1.6
	gamma-BHC (Lindane)	568	2.3	ug/kg	<2.2	<1.1	<4.5	<11.6	<1.1
	Chlordane	1,740	542	ug/kg	<57.8	<29.7	<117	<300	<29.4
	alpha-Chlordane	N/A	N/A	ug/kg	<2.4	<1.2	<4.9	<12.6	<1.2
	gamma-Chlordane	N/A	N/A	ug/kg	<5.6	<2.9	<11.4	<29.3	<2.9
	4,4'-DDD	1900	N/A	ug/kg	<4.1	<2.1	<8.2	<21.1	<2.1
	4,4'-DDE	2,000	N/A	ug/kg	<3.8	<2.0	<7.7	<19.8	2.7 J
	4,4'-DDT	1,890	N/A	ug/kg	<8.6	<4.4	<17.3	<44.4	<4.3
	Dieldrin	34	N/A	ug/kg	<3.7	6.1 J	<7.4	<19.0	<1.9
	Endosulfan I	N/A	N/A	ug/kg	<2.9	<1.5	<5.9	<15.2	<1.5
	Endosulfan II	N/A	N/A	ug/kg	<5.8	<3.0	<11.7	<30.2	<3.0
	Endosulfan sulfate	N/A	N/A	ug/kg	<7.0	<3.6	<14.2	<36.5	<3.6
	Endrin	19,000	162	ug/kg	<4.0	<2.1	<8.1	<20.8	<2.0
	Endrin aldehyde	N/A	N/A	ug/kg	<7.9	<4.1	<15.9	<41.0	<4.0
	Endrin ketone	N/A	N/A	ug/kg	<9.7	12.1 J	<19.6	<50.4	<4.9
	Heptachlor	140	66.2	ug/kg	<3.9	<2.0	<8.0	<20.5	<2.0
	Heptachlor epoxide	72	8.2	ug/kg	<2.7	<1.4	<5.5	<14.1	3.6 J
	Methoxychlor	316000	4320	ug/kg	<58.0	<29.7	<117	<301	<29.5
	Toxaphene	493	928	ug/kg	<155	<79.8	<313	<807	<79.0
EPA 8082A	PCBs - Total	N/A	9.4	ug/kg	57.6	599	27.5 J	47.4 J	507
	PCBs - Aroclor 1016	4,110	N/A	ug/kg	<16.1	<16.4	<16.4	<16.7	<16.2
	PCBs - Aroclor 1221	213	N/A	ug/kg	<16.1	<16.4	<16.4	<16.7	<16.2
	PCBs - Aroclor 1232	190	N/A	ug/kg	<16.1	<16.4	<16.4	<16.7	<16.2
	PCBs - Aroclor 1242	235	N/A	ug/kg	<16.1	455	<16.4	<16.7	507
	PCBs - Aroclor 1248	236	N/A	ug/kg	<16.1	<16.4	<16.4	<16.7	<16.2
	PCBs - Aroclor 1254	239	N/A	ug/kg	57.6	125	27.5 J	47.4 J	<16.2
	PCBs - Aroclor 1260	243	N/A	ug/kg	<16.1	19.0 J	<16.4	<16.7	<16.2
EPA 8270 PAHs	1-Methylnaphthalene	17,600	N/A	ug/kg	17.3 J	47.7	20.2	36.9	35.6
	2-Methylnaphthalene	239,000	N/A	ug/kg	18.3 J	59.9	30.1	54.0	48.9
	Acenaphthene	3,590,000	N/A	ug/kg	17.0 J	8.0 J	<2.3	9.3 J	<2.3
	Acenaphthylene	N/A	N/A	ug/kg	39.8	8.5 J	7.3 J	105	5.5 J
	Anthracene	17,900,000	196,949	ug/kg	55.2	16.6 J	10.6 J	82.9	6.9 J
	Benzo(a)anthracene	1,140	N/A	ug/kg	110	38.4	33.6	296	21.9
	Benzo(a)pyrene	115	470	ug/kg	151	41.9	58.9	434	38.0
	Benzo(b)fluoranthene	1,150	478.1	ug/kg	193	60.9	76.9	525	51.0
	Benzo(ghi)perylene	N/A	N/A	ug/kg	124	24.3	53.1	289	43.8
	Benzo(k)fluoranthene	11,500	N/A	ug/kg	78.1	22.9	33.2	203	19.7
	Chrysene	115,000	144.2	ug/kg	142	49.2	51.5	330	29.3
	Dibenzo(a,h)anthracene	115	N/A	ug/kg	30.8 J	6.4 J	10.6 J	70.6	7.2 J
	Fluoranthene	2,390,000	88,878	ug/kg	212	73.3	62.3	495	34.7
	Fluorene	2,390,000	14,830	ug/kg	28.6 J	11.3 J	3.7 J	16.3 J	3.6 J
	Indeno(1,2,3-cd)pyrene	1,150	N/A	ug/kg	94.5	19.4	38.2	248	30.8
	Naphthalene	5,520	658.2	ug/kg	46.5	43.0	23.2	69.8	33.0
	Phenanthrene	N/A	N/A	ug/kg	122	70.4	29.0	167	31.2
	Pyrene	1,790,000	54,546	ug/kg	174	<2.7	55.8	406	36.2

Notes:

< = Parameter not detected at or above the laboratory detection limit shown.

J = Estimated concentration at or above the Limit of Detection (LOD) and below the Limit of Quantitation (LOQ).

N/A = Not available

NT = Not Tested

VOC = Volatile organic compound

TCLP = Toxicity characteristic leaching procedure

PAH = Polycyclic aromatic hydrocarbons

PCB = Polychlorinated biphenyls

2.0 = Concentration above WDNR Residential Direct Contact Residual Contaminant Level (RCL).

1.1 = Concentration above WDNR Groundwater Pathway RCL.

1= WDNR Residential Direct Contact and Groundwater Pathway RCLs from WDNR online RCL Excel Spreadsheet, updated December 2018. DF=2 for GW RCL.

2= Statewide background threshold values used in the WDNR online RCL Excel spreadsheet are referenced as non-outlier trace element maximum levels in Wisconsin surface soils from the USGS Report at: *http://pubs.usgs.gov/sir/2011/5202*. See also WDNR Publication RR-940.

Prepared by: RLP1
Checked by: RJM7

Table 2
Soil Analytical Results Compared to WI NR 720 Criteria
B34/B35 Supplemental Investigation
Fincantieri Marinette Marine
Marinette, WI
(Page 3 of 3)

		WDNR NR 720			Sample ID				
Analysis		Direct Contact RCL[1]	GW Pathway RCL[1]	Units	GP-10, 0.3 - 4.0'	GP-11, 0.3 - 4.5'	GP-12, 0.2 - 5.0'	GP-12, 5.0 - 7.5'	GP-13, 0.2 - 4.0'
ASTM D2974-87	Moisture	N/A	N/A	%	8.1	9.1	5.8	15.4	9.6
EPA 8260 Detected VOCs	Benzene	1600	5.1	ug/kg	<25	<25	<25	<25	<25
	Ethylbenzene	8020	1,570	ug/kg	<25	<25	<25	<25	<25
	Chlorobenzene	370000	135.8	ug/kg	<25	<25	<25	<25	<25
	p-Isopropyltoluene	162000	N/A	ug/kg	<25	<25	<25	<25	<25
	1,4-Dichlorobenzene	3740	144.0	ug/kg	<25	<25	<25	<25	<25
	n-Butylbenzene	108000	N/A	ug/kg	<30	<30	<30	<30	<30
	sec-Butylbenzene	145000	N/A	ug/kg	<25	<25	<25	<25	<25
	tert-Butylbenzene	183000	N/A	ug/kg	<25	<25	<25	<25	<25
	Naphthalene	5520	658.2	ug/kg	<27.3	<27.3	49.2 J	52.7 J	57.4 J
	Toluene	818000	1,107	ug/kg	<25	<25	<25	<25	116
	1,2,4-Trimethylbenzene	219000	1378.7	ug/kg	<25	<25	<25	<25	30.3 J
	1,3,5-Trimethylbenzene	182000		ug/kg	<25	<25	<25	<25	<25
	m&p-Xylene	260000	3960	ug/kg	<50	<50	<50	<50	96.6 J
	o-Xylene			ug/kg	<25	<25	<25	<25	49.4 J
EPA 6020 Metals	Arsenic	8.3[2]	8.3[2]	mg/kg	3.5	4.0	2.8	5.1	44.4
	Barium	15,300	164.8	mg/kg	22.4	34.4	35.2	34.5	182
	Cadmium	71.1	0.752	mg/kg	0.12 J	<0.11	<0.098	0.39 J	3.1
	Chromium	43.5[2]	43.5[2]	mg/kg	12.4	14.9	10.2	12.5	14.8
	Copper	3,130	91.6	mg/kg	29.0	26.7	17.0	24.3	74.4
	Lead	400	27	mg/kg	21.5	28.5	24.8	207	269
	Selenium	391	0.52	mg/kg	0.59 J	0.55 J	0.48 J	0.57 J	0.76
	Silver	391	0.85	mg/kg	<0.10	<0.10	<0.096	0.14 J	0.27 J
	Zinc	23,500	N/A	mg/kg	56.6	110	48.3	84.3	803
EPA 7471	Mercury	3.13	0.208	mg/kg	0.038	0.028 J	0.012 J	0.074	0.44
EPA 6010 TCLP	Arsenic	NA	NA	mg/L	NT	NT	NT	NT	NT
	Lead	NA	NA	mg/L	NT	NT	NT	0.033	0.044
EPA 6020 Water Neutral Leach	Lead	NA	NA	mg/L	NT	NT	NT	<0.00024	<0.00024
	Zinc	NA	NA	mg/L	NT	NT	NT	<0.010	<0.010
EPA 8081 Pesticides	Aldrin	40	N/A	ug/kg	<29.1	<29.2	<5.7	<31.5	<29.5
	alpha-BHC	86	N/A	ug/kg	<12.4	<12.5	<2.4	<13.5	<12.6
	beta-BHC	301	N/A	ug/kg	<20.9	<21.0	<4.1	<22.6	<21.2
	delta-BHC	N/A	N/A	ug/kg	<15.9	<15.9	<3.1	<17.2	<16.1
	gamma-BHC (Lindane)	568	2.3	ug/kg	<11.5	<11.6	4.2 J	<12.5	<11.7
	Chlordane	1,740	542	ug/kg	<299	<301	<58.4	<324	<304
	alpha-Chlordane	N/A	N/A	ug/kg	<12.5	<12.6	<2.4	<13.6	<12.7
	gamma-Chlordane	N/A	N/A	ug/kg	<29.2	<29.3	<5.7	<31.6	<29.6
	4,4'-DDD	1900	N/A	ug/kg	<21.0	<21.1	<4.1	<22.8	<21.3
	4,4'-DDE	2,000	N/A	ug/kg	<19.7	<19.8	<3.8	<21.4	<20.0
	4,4'-DDT	1,890	N/A	ug/kg	<44.3	<44.5	<8.6	<48.0	<44.9
	Dieldrin	34	N/A	ug/kg	<18.9	<19.0	<3.7	<20.5	<19.2
	Endosulfan I	N/A	N/A	ug/kg	<15.2	<15.2	<3.0	<16.4	<15.4
	Endosulfan II	N/A	N/A	ug/kg	<30.1	<30.3	<5.9	<32.6	<30.5
	Endosulfan sulfate	N/A	N/A	ug/kg	<36.3	<36.5	<7.1	<39.4	<36.9
	Endrin	19,000	162	ug/kg	<20.7	<20.8	<4.0	<22.4	<21.0
	Endrin aldehyde	N/A	N/A	ug/kg	<40.9	<41.1	<8.0	<44.3	<41.5
	Endrin ketone	N/A	N/A	ug/kg	<50.2	<50.5	<9.8	<54.4	<51.0
	Heptachlor	140	66.2	ug/kg	<20.4	<20.5	<4.0	<22.1	<20.7
	Heptachlor epoxide	72	8.2	ug/kg	<14.0	<14.1	<2.7	<15.2	<14.2
	Methoxychlor	316000	4320	ug/kg	<300	<301	<58.5	<325	<304
	Toxaphene	493	928	ug/kg	<804	<808	<157	<871	<816
EPA 8082A	PCBs - Total	N/A	9.4	ug/kg	67.2	25.4 J	35.7 J	87.4	156
	PCBs - Aroclor 1016	4,110	N/A	ug/kg	<16.5	<16.7	<16.1	<17.9	<16.8
	PCBs - Aroclor 1221	213	N/A	ug/kg	<16.5	<16.7	<16.1	<17.9	<16.8
	PCBs - Aroclor 1232	190	N/A	ug/kg	<16.5	<16.7	<16.1	<17.9	<16.8
	PCBs - Aroclor 1242	235	N/A	ug/kg	<16.5	<16.7	<16.1	<17.9	<16.8
	PCBs - Aroclor 1248	236	N/A	ug/kg	<16.5	<16.7	<16.1	<17.9	<16.8
	PCBs - Aroclor 1254	239	N/A	ug/kg	35.0 J	25.4 J	35.7 J	48.7 J	156
	PCBs - Aroclor 1260	243	N/A	ug/kg	32.2 J	<16.7	<16.1	38.8 J	<16.8
EPA 8270 PAHs	1-Methylnaphthalene	17,600	N/A	ug/kg	26.1	<26.8	67.0	61.6 J	266
	2-Methylnaphthalene	239,000	N/A	ug/kg	35.8	<26.9	77.3	73.2 J	387
	Acenaphthene	3,590,000	N/A	ug/kg	5.8 J	<23.8	8.8 J	54.3 J	12.4 J
	Acenaphthylene	N/A	N/A	ug/kg	37.2	111 J	32.2 J	159 J	21.1 J
	Anthracene	17,900,000	196,949	ug/kg	32.7	291	28.3 J	391	34.1 J
	Benzo(a)anthracene	1,140	N/A	ug/kg	100	490	113	776	78.4
	Benzo(a)pyrene	115	470	ug/kg	166	546	152	926	96.9
	Benzo(b)fluoranthene	1,150	478.1	ug/kg	186	746	231	1060	141
	Benzo(ghi)perylene	N/A	N/A	ug/kg	96.3	263	130	563	85.1
	Benzo(k)fluoranthene	11,500	N/A	ug/kg	92.0	293	87.8	466	49.3
	Chrysene	115,000	144.2	ug/kg	114	546	150	860	109
	Dibenzo(a,h)anthracene	115	N/A	ug/kg	22.8	77.2 J	29.5 J	162 J	18.5 J
	Fluoranthene	2,390,000	88,878	ug/kg	142	1240	257	1670	150
	Fluorene	2,390,000	14,830	ug/kg	5.4 J	56.4 J	17.3 J	130 J	27.0 J
	Indeno(1,2,3-cd)pyrene	1,150	N/A	ug/kg	84.4	251	105	488	57.5
	Naphthalene	5,520	658.2	ug/kg	31.8	29.4 J	71.2	82.5 J	355
	Phenanthrene	N/A	N/A	ug/kg	49.5	849	114	1020	199
	Pyrene	1,790,000	54,546	ug/kg	152	854	184	1290	110

Notes:
< = Parameter not detected at or above the laboratory detection limit shown.
J = Estimated concentration at or above the Limit of Detection (LOD) and below the Limit of Quantitation (LOQ).
N/A = Not available
NT = Not Tested
VOC = Volatile organic compound
TCLP = Toxicity characteristic leaching procedure
PAH = Polycyclic aromatic hydrocarbons
PCB = Polychlorinated biphenyls
2.0 = Concentration above WDNR Residential Direct Contact Residual Contaminant Level (RCL).
1.1 = Concentration above WDNR Groundwater Pathway RCL.
1= WDNR Residential Direct Contact and Groundwater Pathway RCLs from WDNR online RCL Excel Spreadsheet, updated December 2018. DF=2 for GW RCL.
2= Statewide background threshold values used in the WDNR online RCL Excel spreadsheet are referenced as non-outlier trace element maximum levels in Wisconsin surface soils from the USGS Report at: *http://pubs.usgs.gov/sir/2011/5202* . See also WDNR Publication RR-940.

Prepared by: RLP1
Checked by: RJM7

Table 4
September 29, 2020 Groundwater Analytical Results
B34/B35 Supplemental Investigation
Fincantieri Marinette Marine
Marinette, Wisconsin

	Parameter	WDNR NR 140 PAL	WDNR NR 140 ES	Units	Sample ID GP-1W	GP-3W	GP-4W	GP-4W-D	GP-6W	GP-W-ER
EPA 8260 Detected VOCs	Benzene	0.5	5	µg/L	3.4	2.5	<0.25	<0.25	<0.25	NT
	Chlorobenzene	20	100	µg/L	2.0 J	0.74 J	<0.71	<0.71	<0.71	NT
	n-Butylbenzene	N/A	N/A	µg/L	<0.71	5.3	<0.71	<0.71	<0.71	NT
	sec-Butylbenzene	N/A	N/A	µg/L	<0.85	1.6 J	<0.85	<0.85	<0.85	NT
	tert-Butylbenzene	N/A	N/A	µg/L	<0.30	1.3	<0.30	<0.30	<0.30	NT
	Naphthalene	10	100	µg/L	<1.2	2.9 J	<1.2	<1.2	<1.2	NT
	Toluene	160	800	µg/L	0.66 J	<0.27	<0.27	<0.27	<0.27	NT
	1,2,4-Trimethylbenzene	96	480	µg/L	<0.84	3.4	<0.84	<0.84	<0.84	NT
	1,3,5-Trimethylbenzene				<0.87	<0.87	<0.87	<0.87	<0.87	NT
	m&p-Xylene	400	2,000	µg/L	0.65 J	<0.47	<0.47	<0.47	<0.47	NT
	o-Xylene				0.39 J	<0.26	<0.26	<0.26	<0.26	NT
EPA 6020 Metals	Arsenic (total)	1	10	µg/L	28.9	115	8.7	8.1	168	NT
	Arsenic (dissolved)				25.1	114	9.9	10	169	NT
	Barium (total)	400	2000	µg/L	736	708	102	95.6	1850	NT
	Barium (dissolved)				720	694	116	120	1880	NT
	Cadmium (total)	5	0.5	µg/L	2.6 J	<0.76	<0.76	<0.76	<0.76	NT
	Cadmium (dissolved)				1.5 J	2.4 J	<0.76	<0.76	<0.76	NT
	Chromium (total)	10	100	µg/L	6.4 J	<5.1	<5.1	<5.1	<5.1	NT
	Chromium (dissolved)				<5.1	<5.1	<5.1	<5.1	<5.1	NT
	Copper (total)	130	1300	µg/L	<9.5	<9.5	<9.5	<9.5	<9.5	NT
	Copper (dissolved)				<9.5	<9.5	<9.5	<9.5	<9.5	NT
	Lead (total)	1.5	15	µg/L	8.1	3.7 J	<1.2	<1.2	<1.2	NT
	Lead (dissolved)				4.0 J	3.0 J	<1.2	<1.2	<1.2	NT
	Selenium (total)	10	50	µg/L	3.5 J	<1.6	<1.6	<1.6	<1.6	NT
	Selenium (dissolved)				2.7 J	3.2 J	<1.6	<1.6	<1.6	NT
	Silver (total)	10	50	µg/L	1.3 J	<0.64	<0.64	<0.64	<0.64	NT
	Silver (dissolved)				0.88 J	1.3 J	<0.64	<0.64	<0.64	NT
	Zinc (total)	2500	5,000	µg/L	<51.6	<51.6	281	254	<51.6	NT
	Zinc (dissolved)				<51.6	<51.6	241	222	<51.6	NT
EPA 7470	Mercury (total)	0.2	2	µg/L	<0.066	<0.066	<0.066	<0.066	<0.066	NT
	Mercury (dissolved)				<0.066	<0.066	<0.066	<0.066	<0.066	NT
EPA 8081 Detected Pesticides	alpha-BHC	N/A	N/A	µg/L	0.017 J	<0.0065	<0.0064	<0.0064	<0.0067	NT
	beta-BHC	N/A	N/A	µg/L	0.019 J	0.022 J	<0.010	<0.010	<0.011	NT
	alpha-Chlordane	N/A	N/A	µg/L	0.010 J	<0.0059	<0.0058	<0.0058	<0.0060	NT
	Endosulfan I	N/A	N/A	µg/L	0.011 J	0.022 J	<0.0072	<0.0072	<0.0075	NT
	Endrin ketone	N/A	N/A	µg/L	0.055 J	<0.025	<0.025	<0.025	<0.026	NT
EPA 8082	PCBs - Total	0.003	0.03	µg/L	<0.11	<0.11	<0.11	<0.11	<0.11	NT
	PCBs - Aroclor 1016	N/A	N/A	µg/L	<0.11	<0.11	<0.11	<0.11	<0.11	NT
	PCBs - Aroclor 1221	N/A	N/A	µg/L	<0.11	<0.11	<0.11	<0.11	<0.11	NT
	PCBs - Aroclor 1232	N/A	N/A	µg/L	<0.11	<0.11	<0.11	<0.11	<0.11	NT
	PCBs - Aroclor 1242	N/A	N/A	µg/L	<0.11	<0.11	<0.11	<0.11	<0.11	NT
	PCBs - Aroclor 1248	N/A	N/A	µg/L	<0.11	<0.11	<0.11	<0.11	<0.11	NT
	PCBs - Aroclor 1254	N/A	N/A	µg/L	<0.11	<0.11	<0.11	<0.11	<0.11	NT
	PCBs - Aroclor 1260	N/A	N/A	µg/L	<0.11	<0.11	<0.11	<0.11	<0.11	NT
EPA 8270 Detected PAHs	1-Methylnaphthalene	N/A	N/A	µg/L	0.53	1.1	<0.0057	<0.0057	0.0096 J	NT
	2-Methylnaphthalene	N/A	N/A	µg/L	0.55	2.4	0.0051 J	0.0061 J	<0.0047	NT
	Acenaphthene	N/A	N/A	µg/L	0.19	0.060	<0.0058	<0.0059	0.010 J	NT
	Anthracene	600	3,000	µg/L	0.020 J	0.018 J	<0.010	<0.010	<0.010	NT
	Fluoranthene	80	400	µg/L	0.022 J	0.033 J	<0.010	<0.010	<0.010	NT
	Fluorene	80	400	µg/L	0.080	0.066	<0.0077	<0.0077	0.0082 J	NT
	Naphthalene	10	100	µg/L	0.29	1.9	<0.018	<0.018	0.021 J	NT
	Phenanthrene	N/A	N/A	µg/L	0.14	0.12	<0.013	<0.013	<0.013	NT
	Pyrene	50	250	µg/L	0.018 J	0.035 J	<0.0074	<0.0074	0.0093 J	NT
MODIFIED EPA 537 Detected PFAS	PFOA	2*	20*	ng/L	500	300	100	110	110	<0.79
	PFOS	2*	20*	ng/L	90	54	390	380	44	<0.50
	PFBS	N/A	N/A	ng/L	7.1	7.1	4.0	4.2	6.2	<0.19
	PFBA	N/A	N/A	ng/L	93	160	320	330	95	<2.2
	PFPeA	N/A	N/A	ng/L	190	620	1100	1100	260	<0.46
	PFHxA	N/A	N/A	ng/L	200	520	810	820	250	<0.54
	PFHpA	N/A	N/A	ng/L	140	200	220	220	130	<0.23
	PFNA	N/A	N/A	ng/L	14	8.3	53	54	21	<0.25
	PFDA	N/A	N/A	ng/L	1.7 J	<0.27	38	36	0.62 J	<0.29
	PFUnA	N/A	N/A	ng/L	<1.0	<0.97	3.2	3.1	<0.96	<1.0
	PFDoA	N/A	N/A	ng/L	<0.50	<0.48	1.9	2.0	<0.48	<0.51
	PFPeS	N/A	N/A	ng/L	9.0	7.9	2.6	3.2	1.2 J	<0.28
	PFHxS	N/A	N/A	ng/L	150	150	89	93	28	<0.53
	PFHpS	N/A	N/A	ng/L	4.3	3.2	4.7	4.5	2.6	<0.18
	FOSA	N/A	N/A	ng/L	31	<0.86	1.5 J	1.4 J	<0.86	<0.91
	NMeFOSAA	N/A	N/A	ng/L	2.6 J	<1.1	<1.1	<1.1	<1.0	<1.1
	NEtFOSAA	N/A	N/A	ng/L	6.0	11	<1.2	<1.2	2.9 J	<1.2
	4:2 FTS - DL	N/A	N/A	ng/L	<22	<21	<0.22	<0.23	2.2 J	<0.22
	6:2 FTS - DL	N/A	N/A	ng/L	380 J	440	6.6	6.1	98	<2.3
	8:2 FTS - DL	N/A	N/A	ng/L	<42	<41	0.90 J	0.96 J	20	<0.43

Notes:
WDNR PAL = Wisconsin Dept. of Natural Resources NR 140 Preventive Action Limit.
WDNR ES = Wisconsin Dept. of Natural Resources NR 140 Enforcement Standard.
< = Parameter not detected at or above the laboratory detection limit shown.
J = Estimated concentration at or above the Limit of Detection (LOD) and below the Limit of Quantitation (LOQ).
* = Recommended Standard. Currently standards are N/A.
N/A = Not available
NT = Not Tested
VOC = Volatile organic compound
PAH = Polycyclic aromatic hydrocarbons
PCB = Polychlorinated biphenyls
PFAS = Per- and polyfluoroalkyl substance
PFOA = Perfluorooctanoic acid
PFOS = Perfluorooctanesulfonic acid
115 = Concentration above WDNR ES.
8.1 = Concentration above WDNR PAL.

Prepared by: RLP1
Checked by: RJM7

Profile List

PASI Green Bay Laboratory

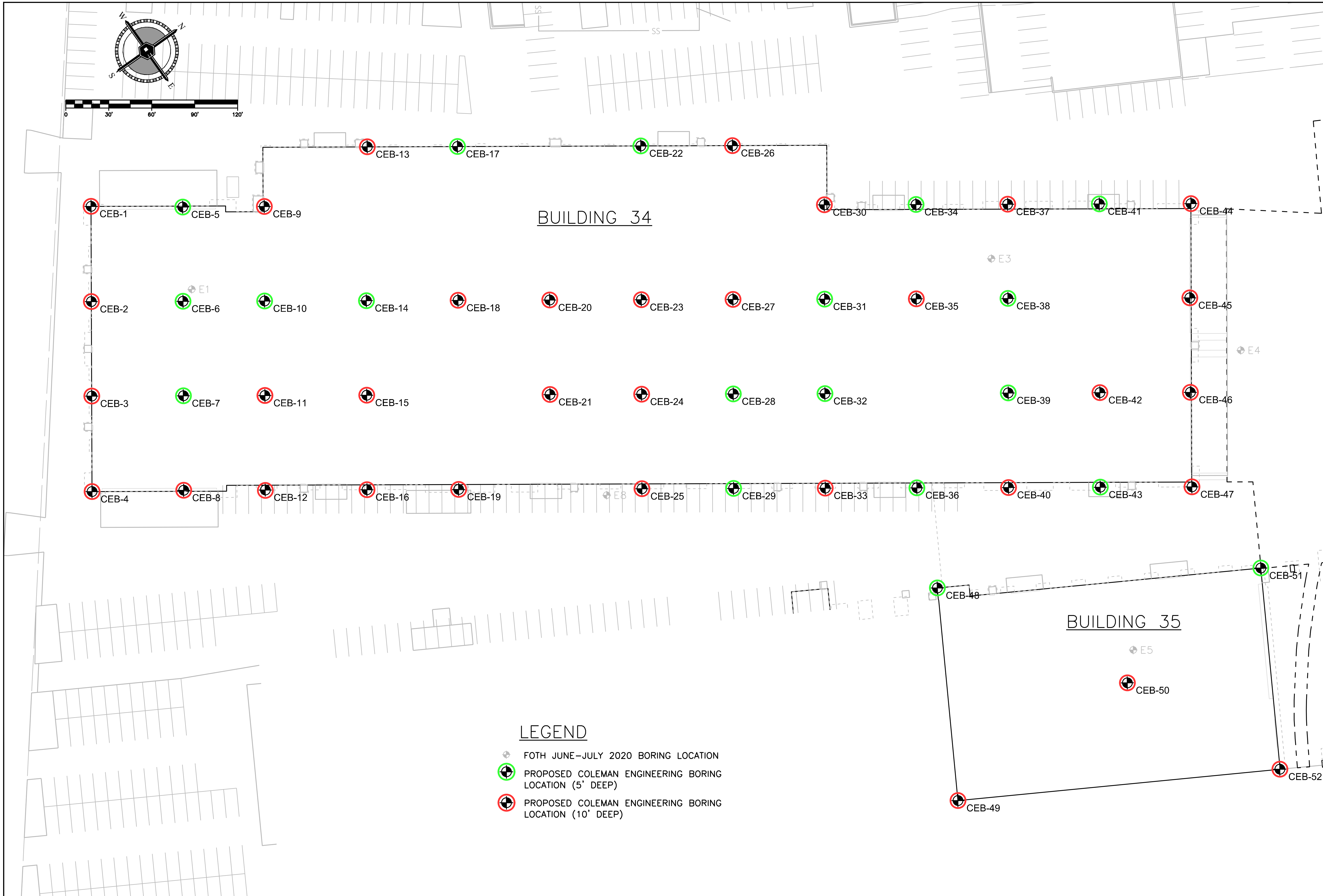
Client COLEMAN ENG **Profile Number** 7121-FMM **Line Item** 1

Line Item	Acode	Cmp List	Cmp	Analyte	CAS No.	PQL	MDL	Units
1	6010 S	Totals	As	Arsenic	7440-38-2	2.5	1.465	mg/kg
			Ba	Barium	7440-39-3	0.5	0.15	mg/kg
			Cd	Cadmium	7440-43-9	0.5	0.133	mg/kg
			Cr	Chromium	7440-47-3	1	0.278	mg/kg
			Cu	Copper	7440-50-8	1	0.277	mg/kg
			Pb	Lead	7439-92-1	2	0.599	mg/kg
			Se	Selenium	7782-49-2	4	1.31	mg/kg
			Ag	Silver	7440-22-4	1	0.307	mg/kg
			Zn	Zinc	7440-66-6	4	1.2	mg/kg
	6010 SA	Water Leach	As	Arsenic	7440-38-2	0.025	0.008345	mg/L
			Pb	Lead	7439-92-1	0.02	0.005911	mg/L
	6010 ST	TCLP	As	Arsenic	7440-38-2	0.025	0.00835	mg/L
			Pb	Lead	7439-92-1	0.02	0.005911	mg/L
	8082 SSOX	PCB	pcb1	PCB-1016 (Aroclor 1016)	12674-11-2	50	15.22	ug/kg
			pcb2	PCB-1221 (Aroclor 1221)	11104-28-2	50	15.22	ug/kg
			pcb3	PCB-1232 (Aroclor 1232)	11141-16-5	50	15.22	ug/kg
			pcb4	PCB-1242 (Aroclor 1242)	53469-21-9	50	15.22	ug/kg
			pcb5	PCB-1248 (Aroclor 1248)	12672-29-6	50	15.22	ug/kg
			pcb6	PCB-1254 (Aroclor 1254)	11097-69-1	50	15.22	ug/kg
			pcb7	PCB-1260 (Aroclor 1260)	11096-82-5	50	15.22	ug/kg
			pcbt	PCB, Total	1336-36-3	50	15.22	ug/kg
	8260 SMSL	PVOC+N	benz	Benzene	71-43-2	20	11.9	ug/kg
			eben	Ethylbenzene	100-41-4	50	11.9	ug/kg
			metb	Methyl-tert-butyl ether	1634-04-4	50	14.7	ug/kg
			naph	Naphthalene	91-20-3	250	15.6	ug/kg
			tolu	Toluene	108-88-3	50	12.6	ug/kg
			12t4	1,2,4-Trimethylbenzene	95-63-6	50	14.9	ug/kg
			13m5	1,3,5-Trimethylbenzene	108-67-8	50	16.1	ug/kg

		mpxy	m&p-Xylene	179601-23-1	100	21.1	ug/kg
		oxyl	o-Xylene	95-47-6	50	15	ug/kg
8270E SPAH	PAH	acp1	Acenaphthene	83-32-9	16.7	2.166	ug/kg
		acp2	Acenaphthylene	208-96-8	16.7	2.105	ug/kg
		anth	Anthracene	120-12-7	16.7	2.072	ug/kg
		beza	Benzo(a)anthracene	56-55-3	16.7	2.158	ug/kg
		bezp	Benzo(a)pyrene	50-32-8	16.7	1.897	ug/kg
		bezf	Benzo(b)fluoranthene	205-99-2	16.7	2.318	ug/kg
		bep2	Benzo(g,h,i)perylene	191-24-2	16.7	2.93	ug/kg
		bef2	Benzo(k)fluoranthene	207-08-9	16.7	2.134	ug/kg
		chry	Chrysene	218-01-9	16.7	3.149	ug/kg
		diba	Dibenz(a,h)anthracene	53-70-3	16.7	2.311	ug/kg
		flut	Fluoranthene	206-44-0	16.7	1.976	ug/kg
		fluo	Fluorene	86-73-7	16.7	2.002	ug/kg
		inde	Indeno(1,2,3-cd)pyrene	193-39-5	16.7	3.479	ug/kg
		1mpe	1-Methylnaphthalene	90-12-0	16.7	2.439	ug/kg
		2myp	2-Methylnaphthalene	91-57-6	16.7	2.442	ug/kg
		naph	Naphthalene	91-20-3	16.7	1.627	ug/kg
		phth	Phenanthrene	85-01-8	16.7	1.912	ug/kg
		pyre	Pyrene	129-00-0	16.7	2.454	ug/kg

APPENDIX B

FIGURES



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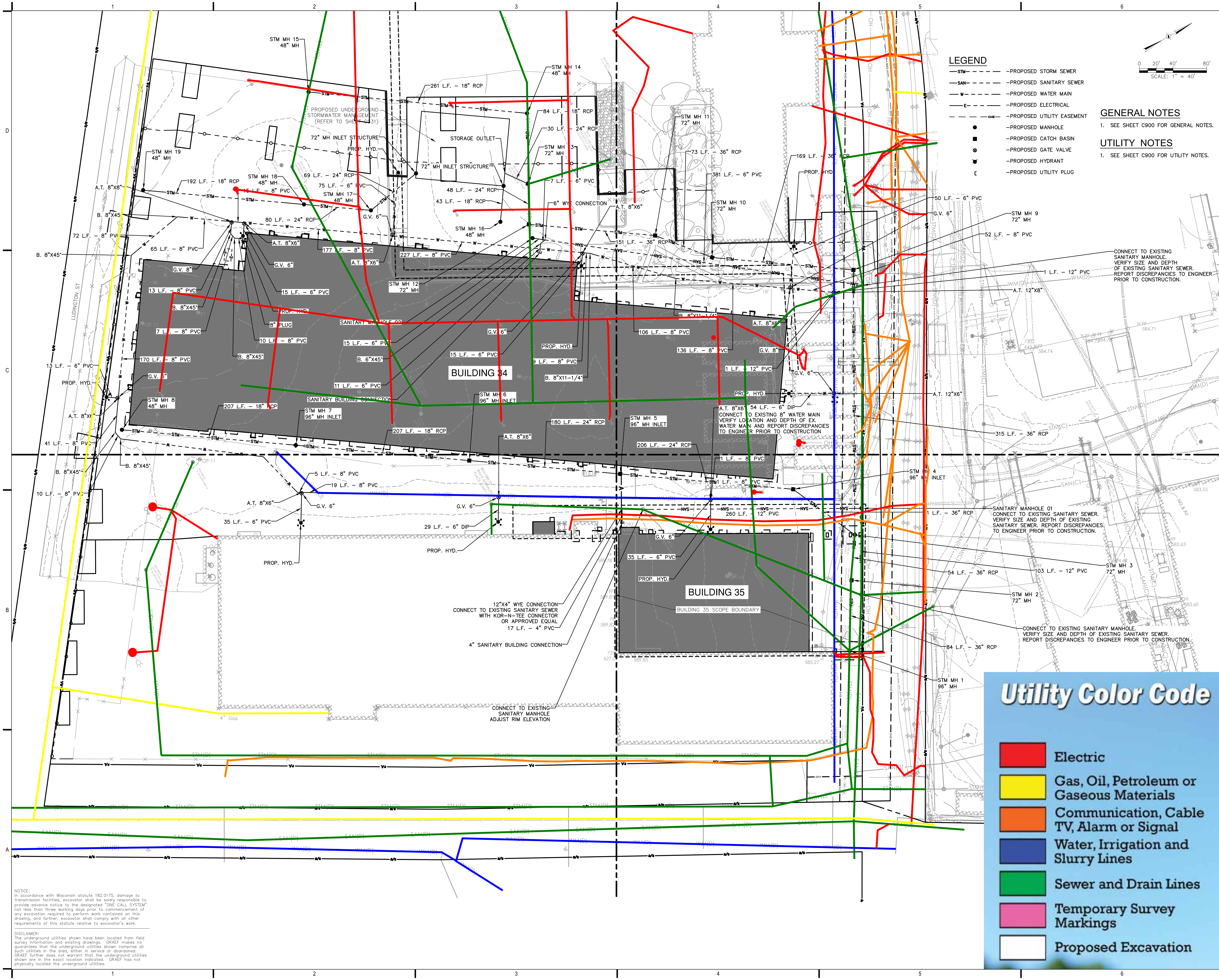
SHEET NAME: PROPOSED GEOPROBE LOCATIONS, BUILDINGS 34 AND 35

CLIENT: FINCANTIERI MARINETTE MARINE

CAD DRAWING: BORING LAYOUT.DWG
CAD PROJECT: 210170
DRAWN BY: RDS
CHECKED BY: WM
SURVEYED BY: CEC
DATE: 2/8/21

02
DRAWING NO.

FILE NAME :



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[redacted] CLIENT:

FINCANTIERI
MARINETTE MARINE

[redacted] PROJECT TITLE:

BUILDING 35 ADDITION

1600 ELY ST.
MARINETTE, WI 54143

[redacted] ISSUE:

1 12/04/2020 PLAN REVIEW SET

[redacted] PROJECT INFORMATION:

PROJECT NUMBER:	2020-0450.35
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APPROVED BY:	RPV
SCALE:	AS SHOWN

[redacted] SHEET TITLE:

OVERALL SITE UTILITY PLAN

[redacted] SHEET NUMBER:

C-500

APPENDIX C

TABLES

SOIL PFAS SAMPLING

Guidance

Introduction

> **NOTE**: Review the General PFAS Sampling Guidance prior to reviewing this guidance document.

This guidance document discusses the processes, decontamination procedures, and acceptable items and materials for sampling soil for per- and polyfluoroalkyl substances (PFAS). In addition, this guidance will be used to support the sampling objectives and procedures based on any Quality Assurance Project Plan (QAPP) developed prior to sampling activities. This guidance assumes staff has basic familiarity with and/or understanding of basic soil sampling procedures.

The Michigan Department of Environmental Quality (DEQ) intends to update the information contained within this PFAS Sampling Guidance document as new information becomes available. The user of this PFAS Sampling Guidance is encouraged to visit the Michigan PFAS Action Response Team webpage (www.michigan.gov/PFASresponse) to access the current version of this document.

Because PFAS compounds can be analyzed at concentrations in the parts per trillion (ppt) range, precautions must be taken to prevent cross-contamination. Field sampling equipment, either rented or not, that is used at multiple sites or sampling locations (also described as non-dedicated equipment), could become highly contaminated with PFAS. If site-specific information is available, sampling should be conducted from the least to the most contaminated locations. Additional guidance on the sampling sequence can be found in **Section 4.3.3** of the **General PFAS Sampling Guidance**.

Soil sampling involves the use of non-dedicated equipment, such as scoops, trowels, shovels, augers and other drilling-related equipment, which could be a source of cross-contamination. Decontamination procedures outlined in this guidance document should be followed to avoid cross contamination and equipment should be verified as PFAS-free.

The site-specific quality assurance document will generally provide the following information:

- Sample collection objectives.
- Locations, number, and volume of samples.
- Types of chemical analyses.
- Specific quality control procedures.
- Additional sampling requirements, as necessary.

This soil sampling guidance document discusses the collection of surface and sub-surface soil samples for PFAS and methods to prevent cross-contamination that can occur from:

- Field clothing and personal protection equipment (PPE)
- Sampling equipment
- Equipment decontamination
- Sample collection and handling
- Sample shipment

Contents

NOTE: Additional information about PFAS testing can be found on the Michigan PFAS Action Response Team (MPART) website: www.michigan.gov/PFASresponse

1. Potential Sources for PFAS Cross-Contamination

Potential sources for PFAS cross-contamination include items and materials used within the sampling environment, such as sampling equipment, field clothing, personal protective equipment (PPE), sun and biological protection products, personal hygiene, personal care products (PCPs), and food packaging. A detailed discussion about potential sources for PFAS cross-contamination is included in the **General PFAS Sampling Guidance**, which should be reviewed before reading this document. However, a high-level summary is presented in this guidance.

All of the items and materials discussed in each of the MDEQ's PFAS Sampling Guidance Documents are divided into three major groups:

- Prohibited (●) identifies items and materials that should not be used when sampling. It is well documented that they contain PFAS or that PFAS are used in their manufacture.
- Allowable (■) identifies items and materials that have been proven not to be sources of PFAS cross contamination and are considered acceptable for sampling.
- Needs Screening (▲) identifies items and materials that have the potential for PFAS cross-contamination due to a lack of scientific data or statements from manufacturers to prove otherwise. These items and materials are further sub-divided into two categories:
  - **Category 1:** Items and materials that will come in direct contact with the sample. These should not be used when sampling unless they are known to be PFAS-free, by collecting an equipment blank sample prior to use.
  - **Category 2:** Items and materials that will not come in direct contact with the sample. These should be avoided, if possible, unless they are known to be PFAS-free by collecting an equipment blank sample prior to use.

Please note that at this time no published research is available that documents the use of various materials and effect on sample results. Therefore, a conservative approach is recommended, and the guidance is based on the collection of multiple environmental samples at various PFAS Sites. Sampling staff should take practical and appropriate precautions to avoid items that are likely to contain PFAS at the sampling site as well as avoid specific items during the sampling event.

A general overview of PFAS contamination sources during sampling can be found in **Section 4.2** of the **General PFAS Sampling Guidance**. Any items or materials utilized that are not identified in this guidance or not discussed in **Section 4.2** should be evaluated as described in **Section 4.2.1**.

Sampling staff should take practical and appropriate precautions to avoid items that are likely to contain PFAS at the sampling site as well as avoid specific items during the sampling event (see below).

1.1 Field Clothing and Personal Protection Equipment (PPE)

NOTE: Both field clothing and PPE should be kept dust and fiber free.

A general overview of field clothing and PPE can be found in **Section 4.2.2** from the **General PFAS Sampling Guidance**. Materials, field clothing, and equipment screening should be performed during the QAPP development or the planning phase of sampling programs. The screening should be performed on all items and materials that are expected to come into contact with the samples and are defined as **Category 1**. This Soil Sampling Guidance assumes that the soil samples will be collected in an environment where only Level D protection (such as steel toe boots, eye protection, hardhat, etc.) is required by the Health and Safety Plan (HASP). During a PFAS investigation, PPE that contains PFAS should be avoided to prevent cross-contamination.

As with any field mobilization, it is the responsibility of all personnel to be aware of the physical, chemical, and biological hazards associated with a particular site. Personal safety is paramount. Any deviation from this guidance, including those necessary to ensure the health and safety of sampling personnel, should be recorded in field notes and discussed in the final report. Any additional field clothing and/or PPE items that might be required for the soil sampling and not discussed in the Sampling Guidance should be evaluated as described in **Sections 4.2.1** and **4.2.2** of the **General PFAS Sampling Guidance**.

Field sampling during wet weather (e.g., rainfall and snow) should be conducted while wearing the proper field clothing.

- ● Dust and fibers must not be allowed to collect on field clothing or PPE.
- ■ Do not use clothing that has been advertised as waterproof, dirt and/or stain repellant that has not been verified to be made of PFAS-free materials.
- ■ Only use clothing/PPE that has been verified to be made of PFAS-free materials.

Powderless nitrile gloves should be changed frequently any time there is an opportunity for cross-contamination. See **Section 6** of this guidance for additional glove instructions.

1.2 Personal Care Products (PCPs)

A number of sampling guidance documents recommend that personal hygiene and personal care products (PCPs) (e.g., cosmetics, shampoo, sunscreens, dental floss, etc.) not be used prior to and on the day(s) of sampling because the presence of PFAS in these products has been documented (OECD, 2002, Fujii, 2013, Borg and Ivarsson, 2017). However, if the MDEQ's sampling SOPs are followed, these items should not come into contact with the sampling equipment or the sample being collected. As of the date of this sampling guidance, cross-contamination of samples due to the use of PCPs has not been documented during the collection of thousands of samples. However, field personnel should be aware of the potential of cross-contamination if the sampling equipment or actual samples would come into contact with these products.

The following precautions should be taken when dealing with personal hygiene or PCPs before sampling:

- ● Do not handle or apply PCPs in the sampling area.
- ● Do not handle or apply PCPs while wearing PPE that will be present during sampling.
- ■ Move to the staging area and remove PPE if applying personal care products becomes necessary.
- ■ Wash hands thoroughly after the handling or application of PCPs and, when finished, put on a fresh pair of powderless nitrile gloves.

1.3 Food Packaging

PFAS has been used by the paper industry as a special protective coating against grease, oil, and water for paper and paperboards, including food packaging since the late 1950s (Trier et al., 2018). PFAS application for food packaging includes paper products that come into contact with food such as paper plates, food containers, bags, and wraps (OECD, 2002). Pre-wrapped food or snacks (such as candy bars, microwave popcorn, etc.) must not be in the sampling and staging areas during sampling due to PFAS contamination of the packaging. When staff requires a break to eat or drink, they should remove their gloves, coveralls, and any other PPE, if worn, in the staging area and move to the designated area for food and beverage consumption. When finished, staff should wash their hands and put on a fresh pair of powderless nitrile gloves at the staging area, before returning to the sampling area.

- ● Do not handle, consume, or otherwise interact with pre-wrapped food or snacks, carry-out food, fast food, or other food items while on-site during sampling.
- ■ Move to the staging area and remove PPE prior to leaving the sampling and staging areas if consuming food on site becomes necessary.

2. Soil Sampling Equipment

Soil sampling equipment is categorized into **Category 1** and **Category 2:**

> **NOTE:** As a precautionary action, an equipment rinsate blank should be collected even if the sampling materials are made of materials that are not expected to contain PFAS.

Category 1: Any item that will directly contact with the soil, including shovels, trowels, spoons, bowls, hand augers buckets and extensions, and augers and direct push equipment, including any split spoon or sampling barrels. This equipment has a high likelihood of cross-contamination occurring if the proper decontamination procedures are not followed. These items should be known to be PFAS free.

Category 2: Any item that will not directly contact the soil, including field books, Munsell® color charts, Post-It® Notes, aluminum foil, and recycled paper towels.

Although these items will not directly contact soil samples, cross-contamination may still occur. Every effort should be made to ensure these items are PFAS-free. Be aware that surfaces of this field equipment or the containers in which they are kept may contain PFAS.

Do not use any equipment that contains any known fluoropolymers or that potentially has been cross-contamination with PFAS such as, but not limited to:

- ● Do not use Polytetrafluoroethylene (PTFE) that includes the trademark Teflon® and Hostaflon®, which can be found in many items, including but not limited to the lining of some hoses and tubing, some wiring, certain kinds of gears, and some objects that require the sliding action of parts.
- ● Do not use Polyvinylidene fluoride (PVDF) that includes the trademark Kynar®, which can be found in many items, including but not limited to tubing, films/coatings on aluminum, galvanized or aluminized steel, wire insulators, and lithium-ion batteries.
- ● Do not use Polychlorotrifluoroethylene (PCTFE), that includes the trademark Neoflon®, which can be found in many items, including but not limited to valves, seals, gaskets, and food packaging.
- ● Do not use Ethylene-tetrafluoro-ethylene (ETFE) that includes the trademark Tefzel®, which can be found in many items, including but not limited to wire and cable insulation and covers, films for roofing and siding, liners in pipes, and some cable tie wraps.
- ● Do not use Fluorinated ethylene propylene (FEP), that includes the trademarks Teflon® FEP and Hostaflon® FEP,

> **NOTE:** Manufacturers can change the chemical composition of any product. As a result, all materials that will come into contact with the sample matrices (defined as Category 1) should be tested to confirm they are "PFAS-free", i.e. will not contaminate samples at detectable levels. **There is no guarantee that materials in the 'Allowable' category will always be PFAS-free.**

●- Prohibited ■ – Allowable ▲- Needs Screening

and may also include Neoflon®, which can be found in many items, including but not limited to wire and cable insulation and covers, pipe linings, and some labware.

- ● Do not use low density polyethylene (LDPE) for any items that will come into **direct contact** with the sample media. LDPE can be found in many items, including but not limited to containers and bottles, plastic bags, and tubing.
  - ▲ **However**, LDPE may be used if an equipment blank has confirmed it to be PFAS-free. LDPE does not contain PFAS in the raw material but may contain PFAS cross-contamination from the manufacturing process.
- ■ LDPE bags (e.g. Ziploc®) that **do not** come into direct contact with the sample media and do not introduce cross-contamination with samples may be used.
- ■ Use items and materials that are either made of high density polyethylene (HDPE), polypropylene, silicone, or acetate.
- ▲ Post-It® Notes should be screened before use.

Staff should follow the **MDEQ PFAS Sampling Quick Reference Field Guide** table for approved and prohibited items for documenting and sampling residential wells for PFAS.

NOTE: Special care and consideration should be given to the field sampling equipment when stored and handled outside the site boundaries or between different sample locations.

Many times, the release of PFAS in the environment occurs concurrently with other chemicals. For example, the release of PFAS present in the aqueous film forming foam (AFFF) is generally associated with the release of flammable liquids, such as jet fuels. As a result, sampling soil for PFAS may occur within plumes of volatile organic compounds (VOCs). For staff protection, the use of a photoionization detector (PID) is recommended to measure VOCs that might be present in the soil. The PID used during PFAS sampling to screen for VOCs may be made of materials that contain PFAS. However, the PID is a **Category 2** field equipment item and will have a very low possibility of cross contamination.

3. Soil Sampling Methods

Soils are usually sampled to define the subsurface geology and presence of aquifers or aquitards (lithology), or to determine the presence or absence of contaminants—in this case, PFAS (chemical analysis).

3.1 Soil Sampling for Lithologic Description

Soil samples are collected to determine the lithologic and physical makeup of the sample (i.e.: clay, sand, gravel, brown, mottled, etc.). This is done to determine the subsurface geologic stratigraphy of the site and help identify possible aquifers and aquitards in the subsurface. Soil can be collected loose or cored.

3.1.1 Loose Soil Samples

A loose soil sample is usually obtained by auger or rotary drilling processes, where the process delivers loose drilled soil to the surface for collection and interpretation. In the auger drilling process, the auger flights deliver soil cuttings to the surface around the auger string. These soils can be collected by a shovel and bagged in LDPE bags (e.g. Ziploc) or piled for later lithologic analysis and entry into a geologic log.

3.1.2 Cored Soil Samples

A cored soil sample is collected with a coring type of mechanism in a way that preserves the soil structure. Most coring mechanisms consist of a steel core barrel with a clear plastic liner (use an acetate or other PFAS-free liner) into which the soil core enters. Once the core barrel is retrieved at the surface, this liner is removed and cut open. The soil core is then sliced open to reveal a clean face. This clean face is examined for lithology and structure.

3.2 Soil Sampling for Chemical Analysis

Soils collected for chemical analysis are usually collected by using the core soil sample method. The soil samples need to be as undisturbed as possible. The requirement of an undisturbed soil sample **excludes** the use of loose auger cuttings or rotary methods of soil collection.
During the soil sampling process, the soil sampling device is removed from the ground. The liner is removed and placed on the cutting board and opened using a liner cutting device. The soil sample is visually inspected, and observations recorded in the site field book. The core is cut open to reveal a "clean" face for sampling. This process avoids the possibility of picking up any contaminants that may have gotten smeared onto the soil surface as the soil core entered the liner.

4. Equipment Decontamination Before Sampling

It is customary with soil sampling that the equipment is decontaminated at the conclusion of the sampling event. If the previous user of the equipment is not known, and it is unclear how the equipment was handled—especially rental equipment—decontaminate the equipment prior to sampling.

Disposable **Category 1** sampling equipment should be used, especially for sample bottles and other materials that are used where the soil sample may be in contact with the sampling equipment for an extended period of time. Field sampling equipment used at multiple sites or sampling locations can become highly contaminated with PFAS. Decontamination procedures should be implemented to prevent cross-contamination, including between individual sample locations.

For non-dedicated **Category 1** sampling equipment, the following items, materials, and procedures should be used for decontamination:

- ● Do not use Decon 90®.
- ■ Laboratory supplied PFAS-free deionized water is preferred for decontamination.
- ■ Alconox®, Liquinox®, and Citranox® can be used for equipment decontamination.
- ■ Sampling equipment can be scrubbed using a polyethylene or Polyvinyl chloride (PVC) brush to remove particulates.
- ■ Decontamination procedures should include triple rinsing with PFAS-free water.
- ■ Commercially available deionized water in an HDPE container may be used for decontamination if the water is verified to be PFAS-free.
- ▲ Municipal drinking water may be used for decontamination purposes if it is known to be PFAS-free.

NOTE: All samples should be collected using PFAS-free High-Density Polyethylene (HDPE), glass, or polypropylene bottles provided by the laboratory, with Teflon®-

●- Prohibited ■ – Allowable ▲- Needs Screening

5. Sample Collection and Handling

The following considerations should be observed for sample collection:

- ● Dust and fibers must be kept out of sample bottles.
- ● The sample cap should never be placed directly on the ground during sampling.
  - ▲ If sampling staff must set the sample bottle cap down during sample collection and a second member of the sampling crew (wearing a fresh pair of powderless nitrile gloves) is not available, set the cap on a clean surface (cotton sheeting, HDPE sheeting, triple rinsed cooler lid, etc.).
- ● Do not sample without powderless nitrile gloves.
- ● Regular size Sharpie® are to be avoided. Thicker markers may contain PFAS.
- ■ Fine and Ultra-Fine point Sharpie® markers are acceptable.
- ■ Ballpoint pens may be used when labeling sample containers. If ballpoint pens do not write on the sample container labels, preprinted labels from the laboratory may be used.
- ■ Bottles should only be opened immediately prior to sampling.
- ■ Hands should be well washed and gloved.
- ■ Use HDPE, glass, or polypropylene sample bottles with Teflon®-free caps, provided by the laboratory.
- ■ Glass bottles or containers may be used if they are known to be PFAS-free, however, PFAS have been found to adsorb to glass, especially when the sample is in contact with the glass for a long period of time (e.g. being stored in a glass container). If the sample comes into direct contact with the glass for a short period of time (e.g. using a glass container to collect the sample, then transferring the sample to a non-glass sample bottle), the adsorption is minimal.
- ■ Commercially bought sample bottles used with automatic sampling equipment should be decontaminated prior to sampling and equipment blank samples should be collected using laboratory supplied PFAS-free water.
- ■ Samples should be double bagged using resealable low density polyethelene (LDPE) bags (e.g., Ziploc®).
- ■ Follow any guidance or requirements in the PFAS analytical reference method that will be used for testing samples, for sample collection, storage, preservation, and holding times.
- ■ If a published testing method is not used, and in the absence of formal United States Environmental Protection Agency (USEPA) guidance for PFAS sample storage, the documentation in USEPA Method 537 Rev. 1.1 should be used as a guide for thermal preservation (holding temperature) and holding times for soil or other samples. Samples must be chilled during storage and shipment and must not exceed 50°F (10º C) during the first 48 hours after collection.
- ▲ Latex gloves should be screened before use.

> **NOTE**: USEPA Method 537 Rev. 1.1 was developed for the analysis of finished drinking water samples only. It was not designed for soils or other matrices that could cause significant interferences to the method. Other analytical methods such as ASTM D7968-14 or D7968-17a may be better at resolving interferences in soil samples. These methods were developed specifically for other matrices such as soil and sediments.

If site-specific information is available, sampling should be conducted from the least to the most contaminated location. Additional guidance on the sampling sequence can be found in **Section 4.3.3** of the **General PFAS Sampling Guidance**.

If possible, collect PFAS samples prior to collecting non-PFAS samples or field parameters (pH, temperature, etc.).

●- Prohibited ■ – Allowable ▲- Needs Screening

Powderless nitrile gloves should be changed any time there is an opportunity for cross-contamination during sampling, including, but not limited to:

- Immediately prior to sample collection
- Each time sampling equipment is placed in and then removed from soil at a new location
- Handling of any sample, including quality assurance/quality control (QA/QC) samples
- After the handling of any non-dedicated sampling equipment
- After contact with non-decontaminated surfaces
- After decontamination of sampling equipment
- When judged necessary by field personnel

6. Sample Shipment

The following procedures should be used for sample shipment:

- ■ Regular ice should be used to cool and maintain the sample at or below 42.8°F (6°C).
    - ▲ Chemical or blue ice may be used if it is known to be PFAS-free and it is absolutely certain that the sample is cooled and maintained at or below 42.8°F (6°C) during collection and through transit to the laboratory.
- ■ Check the cooler periodically to ensure samples are well iced and at the proper temperature.
- ■ Refresh with regular ice, if needed, double bagged in LDPE resealable storage bags if needed.
- ■ Chain of Custody and other forms should be single bagged in LDPE (e.g. Ziploc®) storage bags and taped to the inside of the cooler lid.
- ■ The cooler should be taped closed with a custody seal and shipped by overnight courier.
- ■ Samples should be shipped as soon as possible (e.g. overnight) to ensure the samples arrive within the analytical holding time specified by the lab.

7. Equipment Decontamination After Sampling

It is customary to decontaminate soil sampling equipment at the end of the sampling event, whether it is a single sampling location or the conclusion of the workday. This is to ensure sampling equipment is decontaminated ahead of time for the next sampling event.

- ● Do not put equipment away without decontaminating it.
- ■ Do decontaminate sampling equipment after sampling at each location, or at the end of the workday. Follow the decontamination guidelines in **Section 4 (Equipment Decontamination Before Sampling)** of this document.

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DEQ Michigan Department of Environmental Quality

MDEQ PFAS SAMPLING QUICK REFERENCE FIELD GUIDE[1]

All Items Used During Sampling Event

● Prohibited
• Items or materials that contain fluoropolymers such as ○ Polytetrafluoroethylene (PTFE), that includes the trademarks Teflon® and Hostaflon® ○ Polyvinylidene fluoride (PVDF), that includes the trademark Kynar® ○ Polycholotrifluoroethylene (PCTFE), that includes the trademark Neoflon ® ○ Ethylene-tetrafluoro-ethylene (ETFE), that includes the trademark Tefzel® ○ Fluorinated ethylene propylene (FEP), that includes the trademarks Teflon® FEP and Hostaflon® FEP • Items or materials that contain any other fluoropolymer

Pumps, Tubing, and Sampling Equipment

● Prohibited	■ Allowable	▲ Needs Screening[2]
• Items or materials containing any fluoropolymer (potential items include tubing, valves, or pipe thread seal tape)	• High-density polyethylene (HDPE) • Low-density polyethylene (LDPE) tubing • Polypropylene • Silicone • Stainless-steel • Any items used to secure sampling bottles made from: ○ Natural rubber ○ Nylon (cable ties) ○ Uncoated metal springs ○ Polyethylene	• Any items or materials that will come into direct contact with the sample that have **not** been verified to be PFAS-free ○ Do not assume that any sampling items or materials are PFAS-free based on composition alone

Sample Storage and Preservation

● Prohibited	■ Allowable	▲ Needs Screening[2]
• Polytetrafluoroethylene (PTFE): Teflon® lined bottles or caps	• Glass jars[4] • Laboratory-provided PFAS-Free bottles: ○ HDPE or polypropylene • Regular wet ice • Thin HDPE sheeting • LDPE resealable storage bags (i.e. Ziploc®) that will not contact the sample media[6]	• Aluminium foil[4] • Chemical or blue ice[5] • Plastic storage bags other than those listed as ■ Allowable • Low-density polyethylene (LDPE) bottles

Field Documentation

● Prohibited	■ Allowable	▲ Needs Screening[2]
• Clipboards coated with PFAS • Notebooks made with PFAS treated paper • PFAS treated loose paper • PFAS treated adhesive paper products	• Loose paper (non-waterproof, non-recycled) • Rite in the Rain® notebooks • Aluminium, polypropylene, or Masonite field clipboards • Ballpoint pens, pencils, and Fine or Ultra-Fine Point Sharpie® markers	• Plastic clipboards, binders, or spiral hard cover notebooks • All markers not listed as ■ Allowable • Post-It® Notes or other adhesive paper products • Waterproof field books

Decontamination

● Prohibited	■ Allowable	▲ Needs Screening[2]
• Decon 90® • PFAS treated paper towel	• Alconox®, Liquinox®, or Citranox® • Triple rinse with PFAS-free deionized water • Cotton cloth or untreated paper towel	• Municipal water • Recycled paper towels or chemically treated paper towels

Clothing, Boots, Rain Gear, and PPE

● Prohibited	■ Allowable	▲Needs Screening[2]
• New or unwashed clothing • Anything made of or with: ○ Gore-Tex™ or other water-resistant synthetics • Anything applied with or recently washed with: ○ Fabric softeners ○ Fabric protectors, including UV protection ○ Insect resistant chemicals ○ Water, dirt, and/or stain resistant chemicals	• Powderless nitrile gloves • Well-laundered synthetic or 100% cotton clothing, with most recent launderings not using fabric softeners • Made of or with: ○ Polyurethane ○ Polyvinyl chloride (PVC) ○ Wax coated fabrics ○ Rubber / Neoprene ○ Uncoated Tyvek®	• Latex gloves • Water and/or dirt resistant leather gloves • Any special gloves required by a HASP • Tyvek® suits, clothing that contains Tyvek®, or coated Tyvek®

Food and Beverages

● Prohibited	■ Allowable
• No food should be consumed in the staging or sampling areas, including pre-packaged food or snacks. ■ If consuming food on-site becomes necessary, move to the staging area and remove PPE. After eating, wash hands thoroughly and put on new PPE.	• Brought and consumed only outside the vicinity of the sampling area: ○ Bottled water ○ Hydration drinks (i.e. Gatorade®, Powerade®)

Personal Care Products (PCPs) - for day of sample collection[6]

● Prohibited	■ Allowable	▲Needs Screening[2]
• Any PCPs[6], sunscreen, and insect repellent applied in the sampling area.	PCPs[6], sunscreens, and insect repellents applied in the staging area, away from sampling bottles and equipment followed by thoroughly washing hands: **PCPs[6]:** • Cosmetics, deodorants/antiperspirants, moisturizers, hand creams, and other PCPs[6] **Sunscreens:** • Banana Boat® for Men Triple Defense Continuous Spray Sunscreen SPF 30 • Banana Boat® Sport Performance Coolzone Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Lotion Broad Spectrum SPF 30 • Banana Boat® Sport Performance Sunscreen Stick SPF 50 • Coppertone® Sunscreen Lotion Ultra Guard Broad Spectrum SPF 50 • Coppertone® Sport High Performance AccuSpray Sunscreen SPF 30 • Coppertone® Sunscreen Stick Kids SPF 55 • L'Oréal® Silky Sheer Face Lotion 50 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 50 • Meijer® Sunscreen Continuous Spray Broad Spectrum SPF 30 • Meijer® Clear Zinc Sunscreen Lotion Broad Spectrum SPF 15, 30 and 50 • Meijer® Wet Skin Kids Sunscreen Continuous Spray Broad Spectrum SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Lotion SPF 70 • Neutrogena® Beach Defense Water+Sun Barrier Spray Broad Spectrum SPF 30 • Neutrogena® Pure & Free Baby Sunscreen Broad Spectrum SPF 60+ • Neutrogena® UltraSheer Dry-Touch Sunscreen Broad Spectrum SPF 30 **Insect Repellents:** • OFF® Deep Woods • Sawyer® Permethrin	• Products other than those listed as ■Allowable

[1] This table is not considered to be a complete listing of prohibited or allowable materials. All materials should be evaluated prior to use during sampling. The manufacturers of various products should be contacted in order to determine if PFAS was used in the production of any particular product.

[2] Equipment blank samples should be taken to verify these products are PFAS-free prior to use during sampling.

[3] **For surface water foam samples:** LDPE storage bags may be used in the sampling of foam on surface waters. In this instance, it is allowable for the LDPE bag to come into direct contact with the sample media.

[4] **For fish and other wildlife samples:** Depending on the project objectives, glass jars and aluminum foil might be used for PFAS sampling. PFAS has been found to bind to glass and if the sample is stored in a glass jar, a rinse of the jar is required during the sample analysis. PFAS are sometimes used as a protective layer for some aluminum foils. An equipment blank sample should be collected prior to any aluminum foil use.

[5] Regular ice is recommended as there are concerns that chemical and blue ice may not cool and maintain the sample at or below 42.8˚F (6°C) (as determined by EPA 40 CFR 136 – NPDES) during collection and through transit to the laboratory.

[6] Based on evidence, avoidance of PCPs is considered to be precautionary because none have been documented as having cross-contaminated samples due to their use. However, if used, application of PCPs must be done at the staging area and away from sampling bottles and equipment, and hands must be thoroughly washed after the use of any PCPs prior to sampling.

●- Prohibited ■- Allowable ▲- Needs Screening

Profile List

PASI Green Bay Laboratory

Client COLEMAN ENG **Profile Number** 7121-FMM **Line Item** 1

Line Item	Acode	Cmp List	Cmp	Analyte	CAS No.	PQL	MDL	Units
1	6010 S	Totals	As	Arsenic	7440-38-2	2.5	1.465	mg/kg
			Ba	Barium	7440-39-3	0.5	0.15	mg/kg
			Cd	Cadmium	7440-43-9	0.5	0.133	mg/kg
			Cr	Chromium	7440-47-3	1	0.278	mg/kg
			Cu	Copper	7440-50-8	1	0.277	mg/kg
			Pb	Lead	7439-92-1	2	0.599	mg/kg
			Se	Selenium	7782-49-2	4	1.31	mg/kg
			Ag	Silver	7440-22-4	1	0.307	mg/kg
			Zn	Zinc	7440-66-6	4	1.2	mg/kg
	6010 SA	Water Leach	As	Arsenic	7440-38-2	0.025	0.008345	mg/L
			Pb	Lead	7439-92-1	0.02	0.005911	mg/L
	6010 ST	TCLP	As	Arsenic	7440-38-2	0.025	0.00835	mg/L
			Pb	Lead	7439-92-1	0.02	0.005911	mg/L
	8082 SSOX	PCB	pcb1	PCB-1016 (Aroclor 1016)	12674-11-2	50	15.22	ug/kg
			pcb2	PCB-1221 (Aroclor 1221)	11104-28-2	50	15.22	ug/kg
			pcb3	PCB-1232 (Aroclor 1232)	11141-16-5	50	15.22	ug/kg
			pcb4	PCB-1242 (Aroclor 1242)	53469-21-9	50	15.22	ug/kg
			pcb5	PCB-1248 (Aroclor 1248)	12672-29-6	50	15.22	ug/kg
			pcb6	PCB-1254 (Aroclor 1254)	11097-69-1	50	15.22	ug/kg
			pcb7	PCB-1260 (Aroclor 1260)	11096-82-5	50	15.22	ug/kg
			pcbt	PCB, Total	1336-36-3	50	15.22	ug/kg
	8260 SMSL	PVOC+N	benz	Benzene	71-43-2	20	11.9	ug/kg
			eben	Ethylbenzene	100-41-4	50	11.9	ug/kg
			metb	Methyl-tert-butyl ether	1634-04-4	50	14.7	ug/kg
			naph	Naphthalene	91-20-3	250	15.6	ug/kg
			tolu	Toluene	108-88-3	50	12.6	ug/kg
			12t4	1,2,4-Trimethylbenzene	95-63-6	50	14.9	ug/kg
			13m5	1,3,5-Trimethylbenzene	108-67-8	50	16.1	ug/kg

		mpxy	m&p-Xylene	179601-23-1	100	21.1	ug/kg
		oxyl	o-Xylene	95-47-6	50	15	ug/kg
8270E SPAH	PAH	acp1	Acenaphthene	83-32-9	16.7	2.166	ug/kg
		acp2	Acenaphthylene	208-96-8	16.7	2.105	ug/kg
		anth	Anthracene	120-12-7	16.7	2.072	ug/kg
		beza	Benzo(a)anthracene	56-55-3	16.7	2.158	ug/kg
		bezp	Benzo(a)pyrene	50-32-8	16.7	1.897	ug/kg
		bezf	Benzo(b)fluoranthene	205-99-2	16.7	2.318	ug/kg
		bep2	Benzo(g,h,i)perylene	191-24-2	16.7	2.93	ug/kg
		bef2	Benzo(k)fluoranthene	207-08-9	16.7	2.134	ug/kg
		chry	Chrysene	218-01-9	16.7	3.149	ug/kg
		diba	Dibenz(a,h)anthracene	53-70-3	16.7	2.311	ug/kg
		flut	Fluoranthene	206-44-0	16.7	1.976	ug/kg
		fluo	Fluorene	86-73-7	16.7	2.002	ug/kg
		inde	Indeno(1,2,3-cd)pyrene	193-39-5	16.7	3.479	ug/kg
		1mpe	1-Methylnaphthalene	90-12-0	16.7	2.439	ug/kg
		2myp	2-Methylnaphthalene	91-57-6	16.7	2.442	ug/kg
		naph	Naphthalene	91-20-3	16.7	1.627	ug/kg
		phth	Phenanthrene	85-01-8	16.7	1.912	ug/kg
		pyre	Pyrene	129-00-0	16.7	2.454	ug/kg

APPENDIX D

FORMS

COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE
IRON MOUNTAIN, MICHIGAN 49801
Telephone: (906)-774-3440 Fax: (906)-774-7776

JOB NO.: ______

PROJECT: ______ BORING NO.: ______

CLIENT: ______ 1 OF 1

BORING LOCATION: ______ ELEV.: ______

RIG TYPE: ______ DRILL CREW: ______

DRILLING METHOD: ______ BORING DEPTH: ______

DATE STARTED: ______ DATE COMPLETED: ______ REVIEWED BY: ______ DATE: ______

HOLE CLOSURE: ______

SAMPLE									TEST RESULTS				
NUMBER	SPT VALUES BLOWS/6"(N)	RECOVERY	LEGEND	DEPTH (FT)	SOIL DESCRIPTION	WATER TABLE	ELEV. (FT)	COMMENTS	+4 -4 -200	MOISTURE CONTENT (%)	LL PL	T (tsf)	q_a (tsf) q_u (tsf)
				0									
				1									
				2									
				3									
				4									
				5									
				6									
				7									
				8									
				9									
				10									
				11									
				12									
				13									
				14									
				15									
				16									
				17									
				18									
				19									
				20									

-AS-Auger Sample
-BS-Bag Sample
-RC-Rock-Core
-GS-Grab Sample
-PS-Piston Tube
-2SS-2" Split Spoon
-3SS-3" Split Spoon
-2ST-2" Shelby Tube
-3ST-3" Shelby Tube

▽ while drilling
▼ after drilling
after hours

BORING NO.:

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

COC No.

(Please Print Clearly)

Company Name:	
Branch/Location:	
Project Contact:	
Phone:	
Project Number:	
Project Name:	
Project State:	
Sampled By (Print):	
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Data Package Options (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

MS/MSD
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, Sl = Sludge
W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y / N — PRESERVATION (CODE)* Pick Letter — Analyses Requested									CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

PACE Project No.

Receipt Temp = °C

Sample Receipt pH
OK / Adjusted

Cooler Custody Seal
Present / Not Present
Intact / Not Intact

COLEMAN ENGINEERING COMPANY
635 Circle Drive
Iron Mountain, Michigan 49801
Telephone: (906) 774-3440 Fax: (906) 774-7776

DATE	JOB NO.
PROJECT	
LOCATION	
CONTRACTOR	OWNER
WEATHER	TEMP. ° at AM ° at PM
PRESENT AT SITE	

TO:

COPY TO:

FIELD REPORT

SIGNED

From: Meller, Bob <Bob.Meller@Foth.com>
Sent: Friday, March 12, 2021 12:07 PM
To: Neste, David E - DNR
Cc: Jacobs, Makayla; Netzow, Warren; Frozena, Michele L
Subject: FMM Building 34 PFAS Soil Analytic Results
Attachments: 40222294_frc.pdf

Hi Dave,

As requested, please see attached, a March 11, 2021 PACE Analytical report with PFOA and PFOS soil analytical test results for samples collected from the FMM Building 34 excavation footprint. All samples were collected from a depth of 5-10' below grade, five feet being the approx. water table depth. Please ignore the inches symbol next to several of the sample names in the report. FMM will be requesting that the report be updated to address this typo and you will get a copy of the updated report. However, so as not to hold up the materials management approval process, we are getting you the report today.

Robert J. Meller, P.G., Lead Environmental Scientist
Licensed in Wisconsin
Foth Infrastructure & Environment, LLC
2121 Innovation Court, Suite 300
P.O. Box 5126
De Pere, WI 54115-5126
Ph: (920) 496-6866 / Fax (920) 497-8516
Cell (920) 655-7529
http://www/foth.com

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

March 11, 2021

Ward Mitchell
Coleman Engineering
635 Circle Drive
Iron Mountain, MI 49801

RE: Project: 210170 FMM INDUST., MARINETTE
Pace Project No.: 40222294

Dear Ward Mitchell:

Enclosed are the analytical results for sample(s) received by the laboratory on February 19, 2021. 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:

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

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

SAMPLE SUMMARY

Project: 210170 FMM INDUST., MARINETTE
Pace Project No.: 40222294

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40222294001	**CEB-1-5'-10'**	Solid	02/16/21 10:10	02/19/21 08:45
40222294002	**CEB-9-5'-10'**	Solid	02/16/21 10:50	02/19/21 08:45
40222294003	**CEB-11-5'-10'**	Solid	02/16/21 11:25	02/19/21 08:45
40222294004	**CEB-8-5'-10'**	Solid	02/16/21 11:45	02/19/21 08:45
40222294005	**CEB-16-5'-10'**	Solid	02/16/21 12:28	02/19/21 08:45
40222294006	**CEB-13-5'-10'**	Solid	02/16/21 13:10	02/19/21 08:45
40222294007	**CEB-18-5'-10'**	Solid	02/16/21 14:45	02/19/21 08:45
40222294008	**CEB-4-5'-7.5'**	Solid	02/16/21 12:02	02/19/21 08:45
40222294009	**CEB-25-5'-10'**	Solid	02/16/21 15:30	02/19/21 08:45
40222294010	**CEB-24-5'-10'**	Solid	02/16/21 15:45	02/19/21 08:45
40222294011	**CEB-21-5'-10'**	Solid	02/17/21 09:30	02/19/21 08:45
40222294012	**CEB-23-5'-10'**	Solid	02/17/21 10:05	02/19/21 08:45
40222294013	**CEB-35-5'-10'**	Solid	02/17/21 10:40	02/19/21 08:45
40222294014	**CEB-33-5'-10'**	Solid	02/17/21 11:45	02/19/21 08:45
40222294015	**CEB DUPLICATE 1**	Solid	02/17/21 00:00	02/19/21 08:45
40222294016	**TRIP BLANK**	Water	02/16/21 12:00	02/19/21 08:45
40222294017	**TRIP BLANK**	Water	02/17/21 12:00	02/19/21 08:45
40222294018	**CEB-20-5'-10'**	Solid	02/17/21 09:50	02/19/21 08:45

REPORT OF LABORATORY ANALYSIS

Pace Analytical®

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

40222294
Number 117460

Client	Report to Contact	Telephone No. / E-mail	Quote No.
Coleman Engineering	WARD Mitchell	wmitchell@coleman-engineering.com	
Address: 635 Circle Drive	Sampler's Signature: x Ward D Mitchell	Analysis (Attach list if more space is needed)	Page 1 of 2
City: Iron Mountain; State: MI; Zip Code: 49801	Printed Name: WARD Mitchell		Lot # Bar Code (lab use only)
Project Name: FMM Industries Marinette			
Project No. ~~[illegible]~~ 210170	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	G=Grab C=Composite	Aqueous	Solid	Non-Aqueous	Unpres.	H2SO4	HNO3	HCl	NaOH	5035 Kit	Field Filtered	PFOS	PFOA	Remarks / Cooler I.D.
CEB-1 5'-10'	2-16	10:10	C		X									X	X	001
CEB-9 5'-10'	2-16	10:50	C		X									X	X	002
CEB-11 5'-10'	2-16	11:25	C		X									X	X	003
CEB-8 5'-10'	2-16	11:45	C		X									X	X	004
CEB-16-5'-10'	2-16	12:28	C		X									X	X	005
CEB-13-5'-10'	2-16	13:10	C		X									X	X	006
CEB-18-5'-10'	2-16	14:45	C		X									X	X	007
CEB-21-5'-7.5	2-16	12:02	C		X									X	X	008
																~~009~~ 2/19/21 [illegible]

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☑ Rush (Specify) Contact Client

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

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

QC Requirements (Specify)

Relinquished by	Date	Time	Received by	Date	Time
1. Relinquished by Ward D Mitchell	2-18	3:40pm	1. Received by		
2. Relinquished by Walt co	2/19/21	0845	2. Received by Nicole Hackl Pace	2/19/21	0845
3. Relinquished by			3. Received by		
4. Relinquished by			4. Laboratory received by		

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack
Receipt Temp. 3 °C
Temp Blank ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME003N2-01

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PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 117459 40222294

Client	Report to Contact	Telephone No. / E-mail	Quote No.
Coleman Engineering Co	WARD Mitchell	wmitchell@colemanengineering.com	

Address: 635 Circle Drive
Sampler's Signature: x [signature]
Analysis (Attach list if more space is needed)
Page 2 of 2
City: Iron Mountain State: MI Zip Code: 49802
Printed Name: WARD MITCHELL
Lot # Bar Code (lab use only)
Project Name: FMM Industries Marinette
Project No. ~~122~~ 210170
P.O. No.

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	G=Grab C=Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous		Unpres.	H2SO4	HNO3	HCl	NaOH	5035 Kit	Field Filtered	PFOS	PFOA							Remarks / Cooler I.D.
CEB-25 5'-10'	2-16	15:30	C		X										X	X							009
CEB-24 5'-10'	2-16	15:45	C		X										X	X							010
CEB-21 5'-10'	2-17	9:30	C		X										X	X							011
CEB-23 5'-10	2-17	10:05	C		X										X	X							012
CEB-35 5'-10'	2-17	10:40	C		X										X	X							013
CEB-33 5'-10'	2-17	11:45	C		X										X	X							014
CEB Duplicate 1	2-17	AM	C		X										X	X							015
TRIP Blank	2-16	Pm		X											X	X							016
TRip Blank	2-17	Pm		X											X	X							017
CEB-20 5'-10'	2-17	9:50	C		X										X	X							018

Matrix — No of Containers by Preservative Type

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ **Standard** ☐ **Rush (Specify)**

Sample Disposal ☐ Return to Client ☒ Disposal by Lab

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

QC Requirements (Specify)

Relinquished by	Date	Time	Received by	Date	Time
1. Relinquished by [signature]	2-18	3:04p	1. Received by		
2. Relinquished by Walter	2/19/21	0845	2. Received by [signature] Pace	2/19/21	0845
3. Relinquished by			3. Received by		
4. Relinquished by			4. Laboratory received by		

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack
Receipt Temp. 3 °C
Temp Blank ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME003N2-01

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: Coleman Eng Project # 40222294

All containers needing preservation have been checked and noted below: ☐Yes ☐No ~~☐~~N/A MLL 2-19-21

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

Initial when completed: Date/ Time:

	Glass								Plastic					Vials						Jars				General									
Pace Lab #	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001																										/							2.5 / 5 / 10
002																										/							2.5 / 5 / 10
003																										/							2.5 / 5 / 10
004																										/							2.5 / 5 / 10
005																										/							2.5 / 5 / 10
006																										/							2.5 / 5 / 10
007																										/							2.5 / 5 / 10
008																										/							2.5 / 5 / 10
009																										/							2.5 / 5 / 10
010																										/							2.5 / 5 / 10
011																										/							2.5 / 5 / 10
012																										/							2.5 / 5 / 10
013																										/							2.5 / 5 / 10
014																										/							2.5 / 5 / 10
015																										/							2.5 / 5 / 10
016										1	x																						2.5 / 5 / 10
017								MLL 2-19-21		1	X																						2.5 / 5 / 10
018																										/							2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

2/19/21 KH

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
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	125 ml poly unpres

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: 26Mar2020
	Document No.: **ENV-FRM-GBAY-0014-Rev.00**	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40222294

40222294

Client Name: Coleman Eng

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

Tracking #: 2754266-3

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 - 97 **Type of Ice:** Wet Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 3 /Corr: 3

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

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

Person examining contents: Date: 2/19/21 /Initials: NY

Labeled By Initials: MLR

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out: MLR 2-19-21	~~☑Yes~~ ☒No ☐N/A	2. pres. MLR 2-19-21
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3. no year MLR 2-19-21
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested: MLR	☒Yes ~~☑No~~	7.
Sufficient Volume: MLR 2-19-21 2-19-21 For Analysis: ~~☑Yes~~ ☒No MS/MSD:	☐Yes ☑No ☐N/A	8. All except 016+017 - lab received (1) GN. Adequate volume per PM. 016+017 - lab
Correct Containers Used:	☑Yes ☐No	9. received (1) BBU. MLR 2-19-21
-Pace Containers Used:	☐Yes ☑No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: 2/19/21 NY	~~☑Yes~~ ☒No ☐N/A	12. COC - ~~006~~ 016+017 "Trip Blank", 2/19/21 NY
-Includes date/time/ID/Analysis Matrix: S MLR 2-19-21		~~Nothing~~ No id on sample 2/19/21 NY
Trip Blank Present:	☐Yes ☐No ☑N/A	13. 016+017: analysis description on labels
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	include "FB/EQB". MLR 2-19-21
Pace Trip Blank Lot # (if purchased):		006, 007, +010: don't have military time MLR 2-19-21

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 logir

Report of Analysis

Pace Analytical Services, LLC
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Attention: Dan Milewsky

Project Name: 210170 FMM INDUSTRIES MARINETT

Project Number: 40222294

Lot Number:**WC01003**

Date Completed:03/11/2021

Karen Coonan

03/11/2021 11:48 AM
Approved and released by:
Project Manager II: **Karen L. Coonan**

Case Narrative
Pace Analytical Services, LLC
Lot Number: WC01003

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W" qualifier

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

Sample Summary

Pace Analytical Services, LLC

Lot Number: WC01003

Project Name: 210170 FMM INDUSTRIES MARINETT

Project Number: 40222294

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	CEB-1-5'-10'	Solid	02/16/2021 1010	03/01/2021
002	CEB-9-5'-10'	Solid	02/16/2021 1050	03/01/2021
003	CEB-11-5-10"	Solid	02/16/2021 1125	03/01/2021
004	CEB-8-5-10"	Solid	02/16/2021 1145	03/01/2021
005	CEB-16-5-10"	Solid	02/16/2021 1228	03/01/2021
006	CEB-13-5-10"	Solid	02/16/2021 1310	03/01/2021
007	CEB-18-5-10"	Solid	02/16/2021 1445	03/01/2021
008	CEB-4-5'-7.5'	Solid	02/16/2021 1202	03/01/2021
009	CEB-25-5-10"	Solid	02/16/2021 1530	03/01/2021
010	CEB-24-5-10"	Solid	02/16/2021 1545	03/01/2021
011	CEB-21-5-10"	Solid	02/17/2021 0930	03/01/2021
012	CEB-23-5-10"	Solid	02/17/2021 1005	03/01/2021
013	CEB-35-5-10"	Solid	02/17/2021 1040	03/01/2021
014	CEB-33-5-10"	Solid	02/17/2021 1145	03/01/2021
015	CEB DUPLICATE 1	Solid	02/17/2021	03/01/2021
016	TRIP BLANK	Aqueous	02/16/2021 1200	03/01/2021
017	TRIP BLANK	Aqueous	02/17/2021 1200	03/01/2021
018	CEB-20-5-10"	Solid	02/17/2021 0950	03/01/2021

(18 samples)

Detection Summary
Pace Analytical Services, LLC
Lot Number: WC01003
Project Name: 210170 FMM INDUSTRIES MARINETT
Project Number: 40222294

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	CEB-1-5'-10'	Solid	PFOA	PFAS by ID	1.1	J	ug/kg	5
001	CEB-1-5'-10'	Solid	PFOS	PFAS by ID	4.1		ug/kg	5
002	CEB-9-5'-10'	Solid	PFOA	PFAS by ID	0.50	J	ug/kg	6
002	CEB-9-5'-10'	Solid	PFOS	PFAS by ID	0.84	J	ug/kg	6
003	CEB-11-5-10"	Solid	PFOA	PFAS by ID	0.55	J	ug/kg	7
003	CEB-11-5-10"	Solid	PFOS	PFAS by ID	1.5		ug/kg	7
004	CEB-8-5-10"	Solid	PFOA	PFAS by ID	0.47	J	ug/kg	8
004	CEB-8-5-10"	Solid	PFOS	PFAS by ID	2.5		ug/kg	8
005	CEB-16-5-10"	Solid	PFOA	PFAS by ID	0.35	J	ug/kg	9
005	CEB-16-5-10"	Solid	PFOS	PFAS by ID	1.8		ug/kg	9
006	CEB-13-5-10"	Solid	PFOA	PFAS by ID	0.53	J	ug/kg	10
006	CEB-13-5-10"	Solid	PFOS	PFAS by ID	0.76	J	ug/kg	10
007	CEB-18-5-10"	Solid	PFOA	PFAS by ID	3.7		ug/kg	11
007	CEB-18-5-10"	Solid	PFOS	PFAS by ID	1.2	J	ug/kg	11
008	CEB-4-5'-7.5'	Solid	PFOA	PFAS by ID	0.44	J	ug/kg	12
008	CEB-4-5'-7.5'	Solid	PFOS	PFAS by ID	5.9		ug/kg	12
009	CEB-25-5-10"	Solid	PFOA	PFAS by ID	0.65	J	ug/kg	13
009	CEB-25-5-10"	Solid	PFOS	PFAS by ID	0.54	J	ug/kg	13
010	CEB-24-5-10"	Solid	PFOA	PFAS by ID	0.32	J	ug/kg	14
010	CEB-24-5-10"	Solid	PFOS	PFAS by ID	0.92	J	ug/kg	14
012	CEB-23-5-10"	Solid	PFOS	PFAS by ID	0.64	J	ug/kg	16
013	CEB-35-5-10"	Solid	PFOS	PFAS by ID	0.48	J	ug/kg	17
014	CEB-33-5-10"	Solid	PFOA	PFAS by ID	0.43	J	ug/kg	18
014	CEB-33-5-10"	Solid	PFOS	PFAS by ID	8.9		ug/kg	18
015	CEB DUPLICATE 1	Solid	PFOA	PFAS by ID	0.39	J	ug/kg	19
015	CEB DUPLICATE 1	Solid	PFOS	PFAS by ID	8.7		ug/kg	19

(26 detections)

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-001**	
Description: **CEB-1-5'-10'**		Matrix: **Solid**	
Date Sampled: **02/16/2021 1010**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **62.4**	**03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/08/2021 2202	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.1**	**J**	**1.4**	**0.27**	**ug/kg**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**4.1**		**1.4**	**0.27**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		107	25-150
13C8_PFOS		95	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-002**	
Description: **CEB-9-5'-10'**		Matrix: **Solid**	
Date Sampled: **02/16/2021 1050**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **87.2**	**03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/08/2021 2212	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.50**	**J**	**1.1**	**0.23**	**ug/kg**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**0.84**	**J**	**1.1**	**0.23**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		100	25-150
13C8_PFOS		97	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-003**	
Description: **CEB-11-5-10''**		Matrix: **Solid**	
Date Sampled: **02/16/2021 1125**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **66.8**	**03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/08/2021 2244	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.55**	**J**	**1.3**	**0.26**	**ug/kg**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1.5**		**1.3**	**0.26**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		99	25-150
13C8_PFOS		91	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and $\geq$ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-004**	
Description: **CEB-8-5-10''**		Matrix: **Solid**	
Date Sampled: **02/16/2021 1145**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **80.6**	**03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/08/2021 2255	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.47**	**J**	**1.1**	**0.22**	**ug/kg**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.5**		**1.1**	**0.22**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		98	25-150
13C8_PFOS		94	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-005**	
Description: **CEB-16-5-10''**		Matrix: **Solid**	
Date Sampled: **02/16/2021 1228**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **84.3**	**03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/08/2021 2305	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.35**	**J**	**1.0**	**0.20**	**ug/kg**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1.8**		**1.0**	**0.20**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		94	25-150
13C8_PFOS		83	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and $\geq$ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-006**	
Description: **CEB-13-5-10''**		Matrix: **Solid**	
Date Sampled: **02/16/2021 1310**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **82.2**	**03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/08/2021 2316	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.53**	**J**	**1.0**	**0.21**	**ug/kg**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**0.76**	**J**	**1.0**	**0.21**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		92	25-150
13C8_PFOS		88	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-007**	
Description: **CEB-18-5-10''**		Matrix: **Solid**	
Date Sampled: **02/16/2021 1445**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **67.9**	**03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/08/2021 2327	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**3.7**		**1.3**	**0.25**	**ug/kg**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1.2**	**J**	**1.3**	**0.25**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		90	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and $\geq$ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-008**	
Description: **CEB-4-5'-7.5'**		Matrix: **Solid**	
Date Sampled: **02/16/2021 1202**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **92.2**	**03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/08/2021 2337	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.44**	**J**	**0.92**	**0.18**	**ug/kg**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**5.9**		**0.92**	**0.18**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		95	25-150
13C8_PFOS		89	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-009**	
Description: **CEB-25-5-10''**		Matrix: **Solid**	
Date Sampled: **02/16/2021 1530**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **75.7**	**03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/08/2021 2348	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.65**	**J**	**1.1**	**0.22**	**ug/kg**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**0.54**	**J**	**1.1**	**0.22**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		97	25-150
13C8_PFOS		92	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and $\geq$ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-010**
Description: **CEB-24-5-10''**		Matrix: **Solid**
Date Sampled: **02/16/2021 1545**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **79.5 03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/08/2021 2359	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.32**	**J**	**1.1**	**0.21**	**ug/kg**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**0.92**	**J**	**1.1**	**0.21**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		93	25-150
13C8_PFOS		86	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and $\geq$ DL
H = Out of holding time
W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**	Laboratory ID: **WC01003-011**
Description: **CEB-21-5-10''**	Matrix: **Solid**
Date Sampled: **02/17/2021 0930**	Project Name: **210170 FMM INDUSTRIES**
% Solids: **79.4 03/02/2021 2356**	
Date Received: **03/01/2021**	Project Number: **40222294**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/09/2021 0156	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.1	0.22	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.1	0.22	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		104	25-150
13C8_PFOS		95	25-150

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit
ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL
H = Out of holding time W = Reported on wet weight basis

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-012**	
Description: **CEB-23-5-10''**		Matrix: **Solid**	
Date Sampled: **02/17/2021 1005**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **71.7**	**03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/09/2021 0206	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.3	0.25	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**0.64**	**J**	**1.3**	**0.25**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		90	25-150
13C8_PFOS		82	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and $\geq$ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-013**	
Description: **CEB-35-5-10''**		Matrix: **Solid**	
Date Sampled: **02/17/2021 1040**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **81.9**	**03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/09/2021 0217	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.1	0.22	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**0.48**	**J**	**1.1**	**0.22**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		84	25-150
13C8_PFOS		92	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-014**
Description: **CEB-33-5-10''**		Matrix: **Solid**
Date Sampled: **02/17/2021 1145**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **94.7** **03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/09/2021 0227	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.43**	**J**	**1.0**	**0.21**	**ug/kg**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**8.9**		**1.0**	**0.21**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		97	25-150
13C8_PFOS		90	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-015**
Description: **CEB DUPLICATE 1**		Matrix: **Solid**
Date Sampled: **02/17/2021**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **94.8 03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/09/2021 0238	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.39**	**J**	**0.92**	**0.18**	**ug/kg**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**8.7**		**0.92**	**0.18**	**ug/kg**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		101	25-150
13C8_PFOS		95	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**	Laboratory ID: **WC01003-016**
Description: **TRIP BLANK**	Matrix: **Aqueous**
Date Sampled: **02/16/2021 1200**	Project Name: **210170 FMM INDUSTRIES**
Date Received: **03/01/2021**	Project Number: **40222294**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/04/2021 1212	JJG	03/03/2021 1112	84503

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.9	1.2	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.9	1.2	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		93	25-150
13C8_PFOS		79	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**	Laboratory ID: **WC01003-017**
Description: **TRIP BLANK**	Matrix: **Aqueous**
Date Sampled: **02/17/2021 1200**	Project Name: **210170 FMM INDUSTRIES**
Date Received: **03/01/2021**	Project Number: **40222294**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/04/2021 1222	JJG	03/03/2021 1112	84503

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.5	1.1	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.5	1.1	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		100	25-150
13C8_PFOS		84	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL
H = Out of holding time	W = Reported on wet weight basis		

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC**		Laboratory ID: **WC01003-018**	
Description: **CEB-20-5-10''**		Matrix: **Solid**	
Date Sampled: **02/17/2021 0950**	Project Name: **210170 FMM INDUSTRIES**	% Solids: **83.2**	**03/02/2021 2356**
Date Received: **03/01/2021**	Project Number: **40222294**		

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/09/2021 0248	JJG	03/03/2021 1217	84507

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		1.1	0.22	ug/kg	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		1.1	0.22	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		96	25-150
13C8_PFOS		89	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and $\geq$ DL
H = Out of holding time	W = Reported on wet weight basis		

QC Summary

PFAS by LC/MS/MS - MB

Sample ID: WQ84503-001
Batch: 84503
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/03/2021 1112

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
PFOA	ND		1	4.0	1.0	ng/L	03/04/2021 1108
PFOS	ND		1	4.0	1.0	ng/L	03/04/2021 1108

Surrogate	Q	% Rec	Acceptance Limit
13C8_PFOA		101	25-150
13C8_PFOS		84	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and $\geq$ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID:	WQ84503-002	**Matrix:**	Aqueous
Batch:	84503	**Prep Method:**	SOP SPE
Analytical Method:	PFAS by ID SOP	**Prep Date:**	03/03/2021 1112

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
PFOA	16	17		1	109	50-150	03/04/2021 1119
PFOS	15	15		1	102	50-150	03/04/2021 1119

Surrogate	Q	% Rec	Acceptance Limit
13C8_PFOA		95	25-150
13C8_PFOS		86	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID:	WQ84507-001	**Matrix:**	Solid
Batch:	84507	**Prep Method:**	SOP SPE
Analytical Method:	PFAS by ID SOP	**Prep Date:**	03/03/2021 1217

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
PFOA	ND		1	1.0	0.20	ug/kg	03/08/2021 2140
PFOS	ND		1	1.0	0.20	ug/kg	03/08/2021 2140

Surrogate	Q	% Rec	Acceptance Limit
13C8_PFOA		104	25-150
13C8_PFOS		91	25-150

LOQ = Limit of Quantitation | ND = Not detected at or above the DL | N = Recovery is out of criteria
DL = Detection Limit | J = Estimated result < LOQ and ≥ DL | P = The RPD between two GC columns exceeds 40%
* = RSD is out of criteria | + = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID:	WQ84507-002	**Matrix:**	Solid
Batch:	84507	**Prep Method:**	SOP SPE
Analytical Method:	PFAS by ID SOP	**Prep Date:**	03/03/2021 1217

Parameter	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
PFOA	2.0	2.0		1	101	50-150	03/08/2021 2151
PFOS	1.9	1.8		1	99	50-150	03/08/2021 2151

Surrogate	Q	% Rec	Acceptance Limit
13C8_PFOA		101	25-150
13C8_PFOS		91	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: WC01003-002MS
Batch: 84507
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 03/03/2021 1217

Parameter	Sample Amount (ug/kg)	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
PFOA	0.50	2.0	2.3		1	91	50-150	03/08/2021 2223
PFOS	0.84	1.9	3.0		1	117	50-150	03/08/2021 2223

Surrogate	Q	% Rec	Acceptance Limit
13C8_PFOA		106	25-150
13C8_PFOS		101	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
\+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: WC01003-002MD
Batch: 84507
Analytical Method: PFAS by ID SOP

Matrix: Solid
Prep Method: SOP SPE
Prep Date: 03/03/2021 1217

Parameter	Sample Amount (ug/kg)	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
PFOA	0.50	2.2	2.6		1	92	9.0	50-150	30	03/08/2021 2233
PFOS	0.84	2.1	3.1		1	111	3.1	50-150	30	03/08/2021 2233

Surrogate	Q	% Rec	Acceptance Limit
13C8_PFOA		97	25-150
13C8_PFOS		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

Internal Transfer Chain of Custody

☐ Samples Pre-Logged into eCOC.

State Of Origin: WI

Cert. Needed: ☒ Yes ☐ No

Workorder: 40222294 Workorder Name: 210170 FMM INDUSTRIES MARINETT Owner Received Date: 2/19/2021 Results Requested By: 3/1/2021

Pace Analytical® www.pacelabs.com

Report To	Subcontract To
Dan Milewsky Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436	Pace Analytical West Columbia 106 Vantage Point Drive West Columbia, SC 29172 Phone (803)791-9700

Requested Analysis

WC01003

KLC2

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	PFOA and PFAS by WDNR guidance	LAB USE ONLY
1	CEB-1-5'-10'	PS	2/16/2021 10:10	40222294001	Solid	2	X	
2	CEB-9-5'-10'	PS	2/16/2021 10:50	40222294002	Solid	2	X	
3	CEB-11-5'-10'	PS	2/16/2021 11:25	40222294003	Solid	2	X	
4	CEB-8-5'-10'	PS	2/16/2021 11:45	40222294004	Solid	2	X	
5	CEB-16-5'-10'	PS	2/16/2021 12:28	40222294005	Solid	2	X	
6	CEB-13-5'-10'	PS	2/16/2021 13:10	40222294006	Solid	2	X	
7	CEB-18-5'-10'	PS	2/16/2021 14:45	40222294007	Solid	2	X	
8	CEB-4-5'-7.5'	PS	2/16/2021 12:02	40222294008	Solid	2	X	
9	CEB-25-5'-10'	PS	2/16/2021 15:30	40222294009	Solid	2	X	
10	CEB-24-5'-10'	PS	2/16/2021 15:45	40222294010	Solid	2	X	
11	CEB-21-5'-10'	PS	2/17/2021 09:30	40222294011	Solid	2	X	
12	CEB-23-5'-10'	PS	2/17/2021 10:05	40222294012	Solid	2	X	
13	CEB-35-5'-10'	PS	2/17/2021 10:40	40222294013	Solid	2	X	
14	CEB-33-5'-10'	PS	2/17/2021 11:45	40222294014	Solid	2	X	
15	CEB DUPLICATE 1	PS	2/17/2021 00:00	40222294015	Solid	2	X	
16	TRIP BLANK	PS	2/16/2021 12:00	40222294016	Water	2	X	
17	TRIP BLANK	PS	2/17/2021 12:00	40222294017	Water	2	X	
18	CEB-20-5'-10'	PS	2/17/2021 09:50	40222294018	Solid	2	X	

2/19/21 hp

Friday, February 19, 2021 1:12:10 PM FMT-ALL-C-002rev.00 24March2009 Page 1 of 2

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	[illegible]	2/19/21 1600			
2					
3	FedEx	2/1/2021 0900	[illegible]	3/1/2021 0900	

Cooler Temperature on Receipt 1.7 °C	Custody Seal Y or N	Received on Ice Y or N	Samples Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

WC01003

KLc2

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PaceAnalytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: PACE Cooler Inspected by/date: JSH / 03/01/2021 Lot #: WC01003

Means of receipt: [ ] Pace [ ] Client [ ] UPS [✓] FedEx [ ] Other: ______

[ ] Yes	[✓] No		1. Were custody seals present on the cooler?
[ ] Yes	[ ] No	[✓] NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

1.7 / 1.7 °C NA / NA °C NA / NA °C NA / NA °C

Method: [ ] Temperature Blank [✓] Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: [✓] Wet Ice [ ] Ice Packs [ ] Dry Ice [ ] None

[ ] Yes	[ ] No	[✓] NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
[ ] Yes	[ ] No	[✓] NA	4. Is the commercial courier's packing slip attached to this form?
[✓] Yes	[ ] No		5. Were proper custody procedures (relinquished/received) followed?
[✓] Yes	[ ] No		6. Were sample IDs listed on the COC?
[✓] Yes	[ ] No		7. Were sample IDs listed on all sample containers?
[✓] Yes	[ ] No		8. Was collection date & time listed on the COC?
[✓] Yes	[ ] No		9. Was collection date & time listed on all sample containers?
[✓] Yes	[ ] No		10. Did all container label information (ID, date, time) agree with the COC?
[✓] Yes	[ ] No		11. Were tests to be performed listed on the COC?
[✓] Yes	[ ] No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? ______
[✓] Yes	[ ] No		13. Was adequate sample volume available?
[ ] Yes	[✓] No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
[ ] Yes	[✓] No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
[ ] Yes	[ ] No	[✓] NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
[ ] Yes	[ ] No	[✓] NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
[ ] Yes	[ ] No	[✓] NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
[ ] Yes	[ ] No	[✓] NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
[ ] Yes	[ ] No	[✓] NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
[ ] Yes	[✓] No		21. Was the quote number listed on the container label? If yes, Quote # NA

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: JRG2 Date: 03/01/2021

Comments: