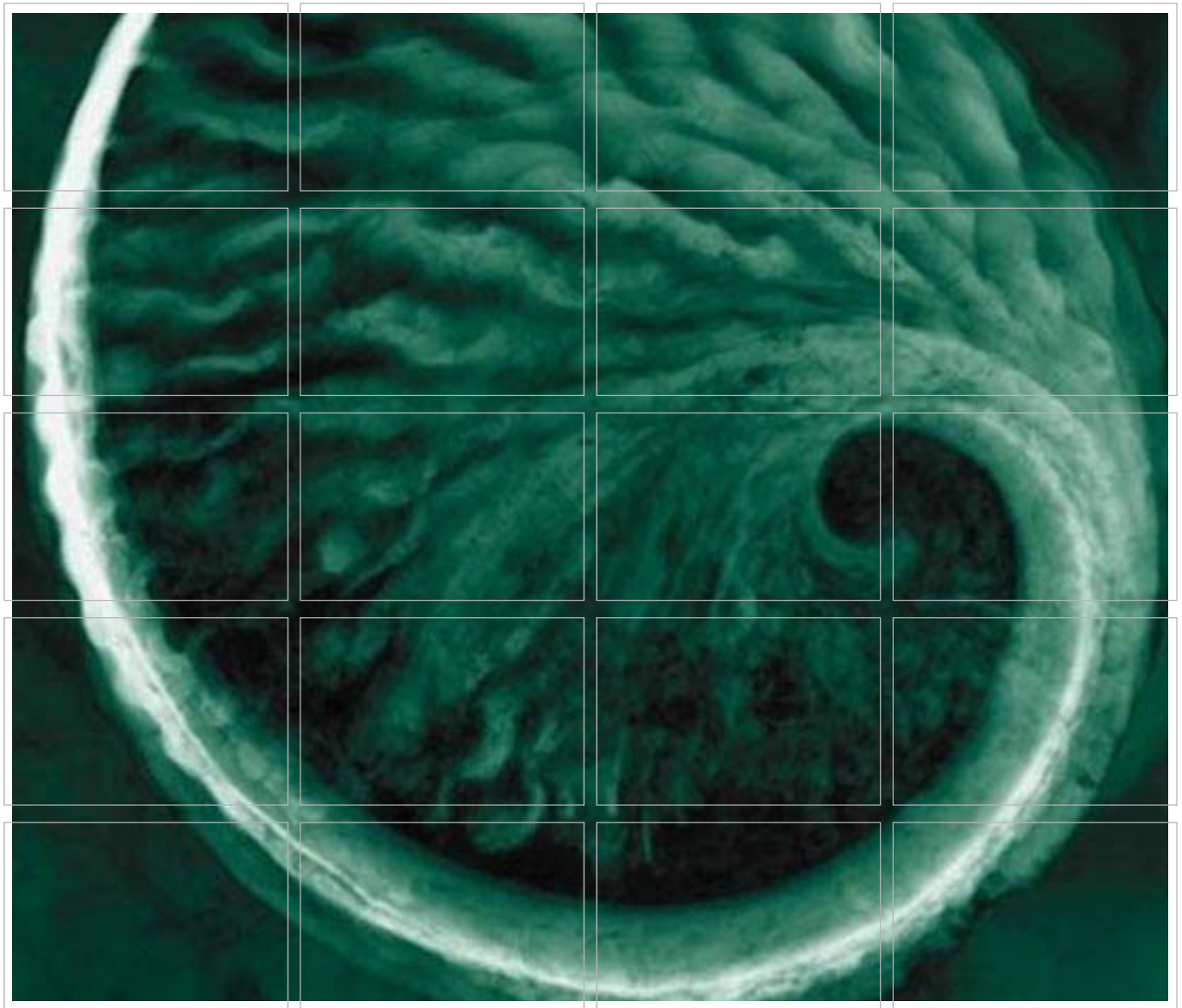




Emerging Contaminant Evaluation

Robintech/Compudyne, Inc.
Owego, New Yorkork

22 March 2019

Project No.: 0482594

Emerging Contaminant Evaluation

Robintech/Compudyne, Inc.
Owego, New York



Rob Sents
Project Manager

ERM Consulting and Engineering, Inc.
5784 Widewaters Parkway
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Acronyms and Abbreviations

1, 1, 1,TCA	1,1,1-Trichloroethane
CVOC	Chlorinated Volatile Organic Compounds
DUSR	Data Usability Summary Report
IDW	Investigative Derived Waste
LDPE	Low-Density Polyethylene
NYSDEC	New York State Department of Environmental Conservation
NELAP	National Environmental Laboratory Accreditation Program
PDB	Passive Diffusion Bag
PFAS	Per and Poly Fluoro-Alkylated Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PMP	Performance Monitoring Program
TCE	Trichloroethene
VOC	Volatile Organic Compound
USEPA	United States Environmental Protection Agency

1. INTRODUCTION

ERM Consulting & Engineering, Inc. (ERM) was contracted to complete a limited emerging contaminant evaluation at the Robintech/Compudyne, Inc. Facility in Owego, NY (the Site, Figure 1). ERM submitted an Emerging Contaminants Sampling Plan to the New York State Department of Environmental Conservation (NYSDEC) project manager, which was accepted via email on 24 October 2018. The groundwater sampling event was completed on 24 and 25 October 2018.

1.1 PROJECT BACKGROUND

The Site identified as the Robintech/Compudyne, Inc. makes up a portion of a former printed circuit board plant in Owego, New York with manufacturing operations, which ceased in 2018. The Site is in the New York State Superfund Program under Site Number 754007. A groundwater pump and treat remediation system at the site continues in full operation to minimize off-site migration of chlorinated volatile organic compounds (CVOC) and to reduce CVOC mass onsite. A sub-slab depressurization system continues to be operated, maintained and monitored at the Site for the purpose of preventing vapor intrusion. Groundwater monitoring is conducted on a semi-annual basis pursuant to a NYSDEC approved Performance Monitoring Program (PMP) dated 21 February 1997.

As part of a statewide evaluation being undertaken by the NYSDEC at remediation sites, a request was received on 11 June 2018 requiring the evaluation of Site groundwater for 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS; emerging contaminants). This request was discussed with the NYSDEC and it was agreed that the requested groundwater evaluation would be completed during the second semi-annual PMP event. ERM prepared and submitted an Emerging Contaminants Sampling Plan following the guidance provided in the NYSDEC's request letter. The Sampling Plan discussed the rationale for proposed sampling locations and some background on the potential for emerging contaminants at the Site. The Sampling Plan was accepted by the NYSDEC on 24 October 2018.

As stated on the Sampling Plan, 1,4-dioxane is a solvent that was used for a variety of applications and is most often associated with its use as stabilizer for 1,1,1-Trichloroethane (1,1,1-TCA), which has been identified in groundwater at the Site. There is a potential for 1,4-dioxane to be present in groundwater collected from monitoring wells where 1,1,1-TCA has been detected. ERM evaluated the PMP data and identified monitoring wells that contain 1, 1, 1-TCA and proposed that these monitoring wells be used to screen the Site for both 1, 4-dioxane and PFAS. These monitoring wells are distributed across the Site and provide vertical and horizontal coverage of the Site for the potential presence of 1, 4-dioxane and/or PFAS.

2. SAMPLING METHODOLOGY

Samples were collected concurrently with the October 2018 PMP sampling event to limit mobilizations and maximize efficiency. A Site-wide well gauging round was completed prior to any sample collection. Groundwater elevation measurements were collected at monitoring wells to evaluate groundwater flow direction. Groundwater contour maps for the shallow overburden, deep overburden, and bedrock groundwater zones were prepared. These maps are attached as Figures 3, 4, and 5, respectively.

PMP samples are collected via passive diffusion bags (PDBs) for volatile organic compounds (VOCs) only. As stated in the Sampling Plan, PDBs are constructed of low-density polyethylene (LDPE) and have a protective LDPE mesh around the bags, and LDPE may contain PFAS. As a result, ERM removed 1-2 well volumes from each well containing a PDB prior to commencing low-flow purging and sampling techniques as outlined in the United States Environmental Protection Agency (USEPA) Low-Stress (Low-

Flow) SOP (USEPA, 2010). Following sample collection, PDBs were redeployed in all PMP monitoring wells. All investigative derived waste (IDW) was placed in labeled drums for proper disposal and management by Sanmina-SCI.

At MW-36 and MW-27, two full well volumes were not removed due to the quantity of IDW that would be generated. At MW-36, two well volumes constituted 110 gallons due to the depth and diameter of this bedrock monitoring well. Similarly, depth and diameter of MW-27 made a two well volume purge not only time prohibitive, but also would result in a very large volume (hundreds of gallons) of investigation derived waste.

2.1 Analytical Testing

ERM sent groundwater samples to Alpha Analytical of Westborough, Massachusetts (Alpha), a National Laboratory Accreditation Program (ELAP)-approved laboratory. All samples were packed in pre-chilled coolers according to laboratory guidelines. All coolers were transferred via Alpha's courier service to the laboratory within hold times and within the proper temperature range. All samples were sampled, handled and analyzed following the guidelines included in the NYSEC's request letter. Analytical Category B Deliverable were prepared by the laboratory and provided to Environmental Data Services, Inc. for third-party review and validation. A Data Usability Summary Report (DUSR) was prepared and the validated data was electronically submitted the NYSDEC's database (Attachment A).

3. RESULTS

Analytical results for the monitoring wells sampled for PFAS and 1, 4-dioxane are presented on Figure 6 and Figure 7, and are summarized in Table 1. The upgradient monitoring well (MW-4) was non-detect for 1, 4-dioxane and has only a minor PFAS detection. Detections of 1, 4-dioxane ranged from non-detect in MW-4 (upgradient monitoring well) to 15,700 ng/L in RW-4 (1, 1, 1-TCA source area). The highest downgradient concentrations occur in RW-6, indicating that 1,4-dioxane is behaving similar to Trichloroethene (TCE) and diving deeper as it moves away from the former Photo area (RW-4, source area). Concentrations of PFAS compounds perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were both detected at their maximum concentrations offsite to the south at MW-33A (9.60 ng/L and 56.0 ng/L, respectively). The highest onsite detection of PFOA was 2.28 ng/L at MW-14, and the highest onsite detection for PFOS was 39.0 ng/L at RW-4, neither concentration is over the current United States Environmental Protection Agency (USEPA) drinking water health advisory of 70 ng/L.

4. DISCUSSION

PFOA and PFOS in groundwater do not appear to be a major concern at the Site. The highest concentrations observed were offsite at MW-33A, which is a shallow overburden monitoring well on the wastewater treatment plant property. The adjacent deep overburden monitoring well, MW-32, was non-detect for both compounds. The presence of these compounds in the shallow monitoring well and not the deeper monitoring well suggests a local source for these compounds, since it is not detected throughout the aquifer. Wastewater treatment plants, such as where MW-33A is located, are often sources of PFAS into the environment (ITRC 2018). PFAS concentrations typically observed near wastewater treatment plants range from 24 to 100 ng/L, with higher values reported near plants accepting water from chrome plating activities (Becker, Gertsman, and Frank, 2008; Boulanger et al. 2005; Wilkinson et al. 2017; MDH 2008). Biosolids are stored on the wastewater treatment plant property upgradient of MW-33A, and are a possible source of PFOA and PFOS (Schultz et al. 2006).

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Owego, New York

PFAS compounds (particularly PFOA and PFOS) readily sorb to organic carbon in soil and sediment (Higgins and Luthy 2006; Guelfo and Higgins 2013) and may retard advection of these compounds downgradient, which is the most common driver in PFAS mobility (ITRC 2018). Due to the lack of defined source areas or historical documentation of use or disposal of PFAS compounds onsite, it is not anticipated that PFAS compounds are an environmental driver at this Site.

1, 4-dioxane's properties and behavior are very different from PFAS compounds. It is miscible in water and readily moves via advection, dispersion, and diffusion processes. As a result, it has followed the pattern of the known TCE plume, diving deeper in the aquifer as it travels downgradient. Detections in deep overburden and bedrock monitoring wells were higher at the property line than concentrations in shallow groundwater. The absence of 1,4-dioxane in the upgradient sentinel well suggests that the RW-4 area is a source of a low level 1,4-dioxane plume concurrent with known TCE and 1,1,1-TCA plumes.

5. REFERENCES

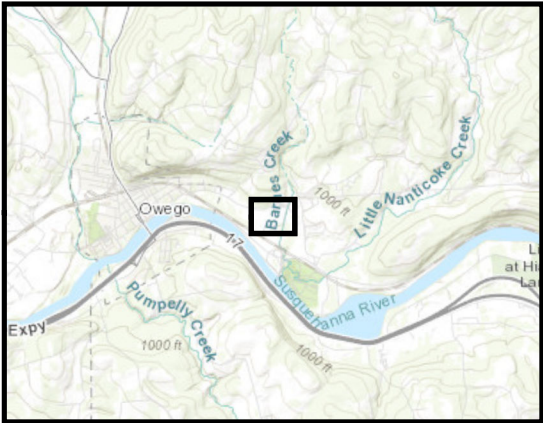
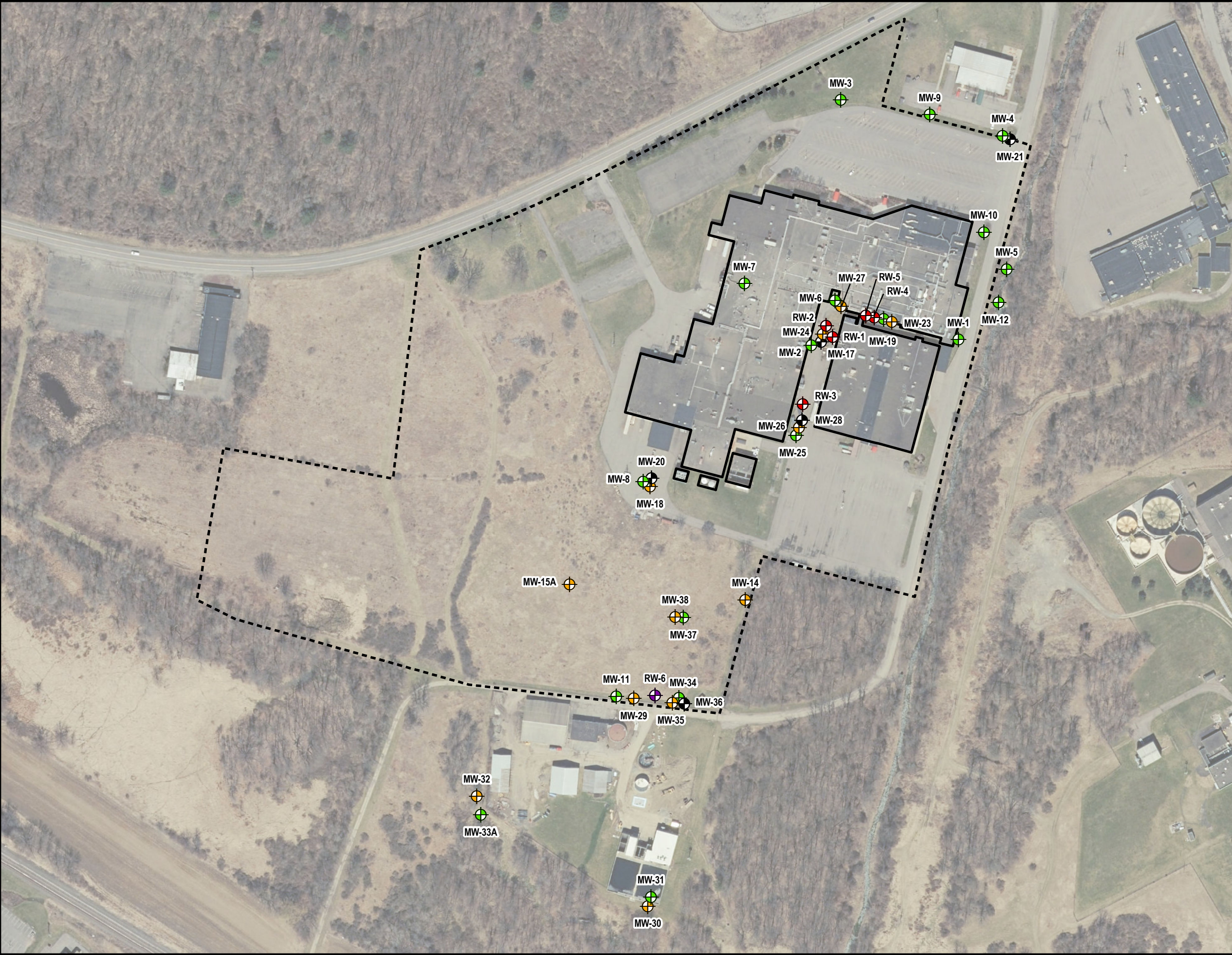
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Owego, New York

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FIGURES



- Legend**
- Shallow Overburden Monitoring Well
 - Shallow Overburden Recovery Well
 - Deep Overburden Monitoring Well
 - Bedrock Monitoring Well
 - Bedrock Recovery Well
 - Building Outline
 - Robintech Compudyne Site Boundary

NOTES:
- Aerial Imagery: ESRI World Imagery,
Reproduced under lisenue with ArcGIS 10

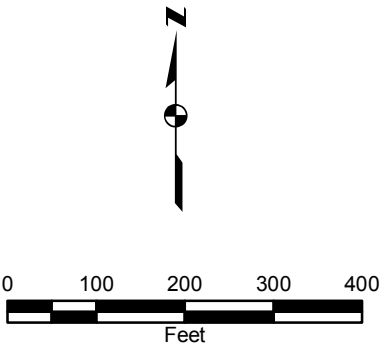
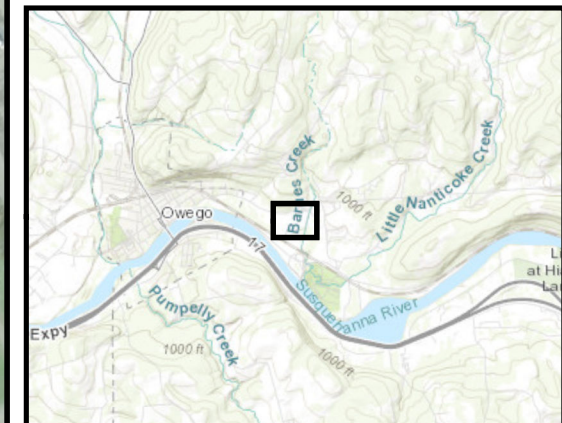
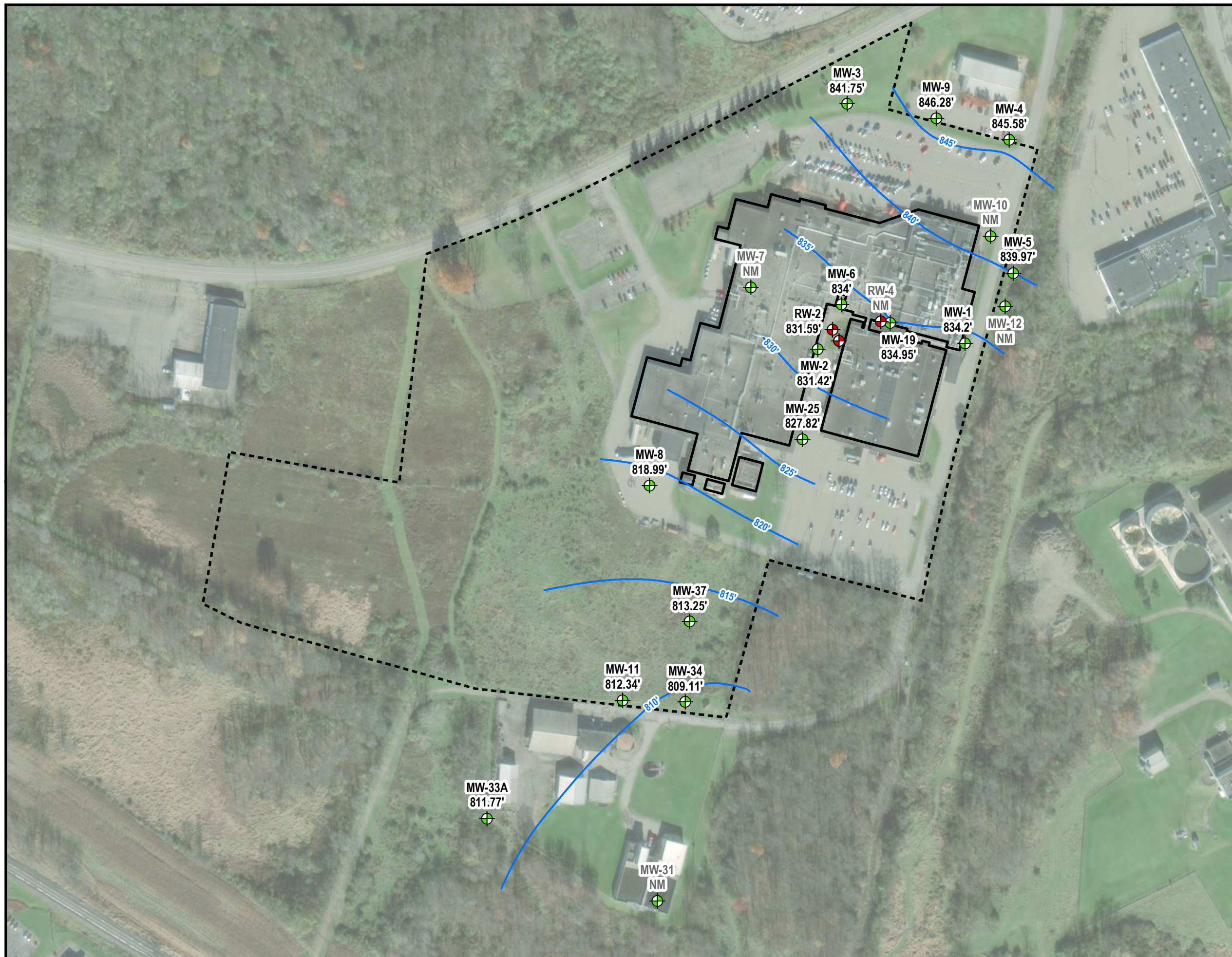


Figure 2: Monitoring Well Locations
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Owego, NY





Legend

- Shallow Overburden Monitoring Well
- Shallow Overburden Recovery Well
- 839.83'** April 2018 Groundwater Elevation (ft)
- Groundwater Elevation Contours (ft)
- Building Outline
- Robintech Compudyne Site Boundary

NOTES:

- Groundwater elevation was measured on 24 October, 2018
- NM = Not measured
- Aerial Imagery: ESRI World Imagery, Reproduced under license with ArcGIS 10

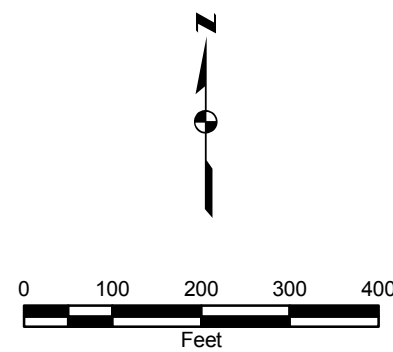
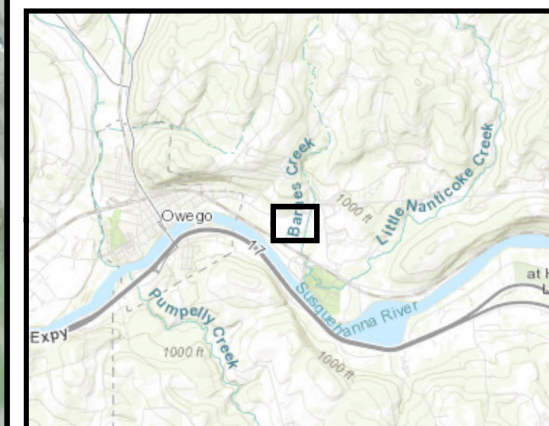
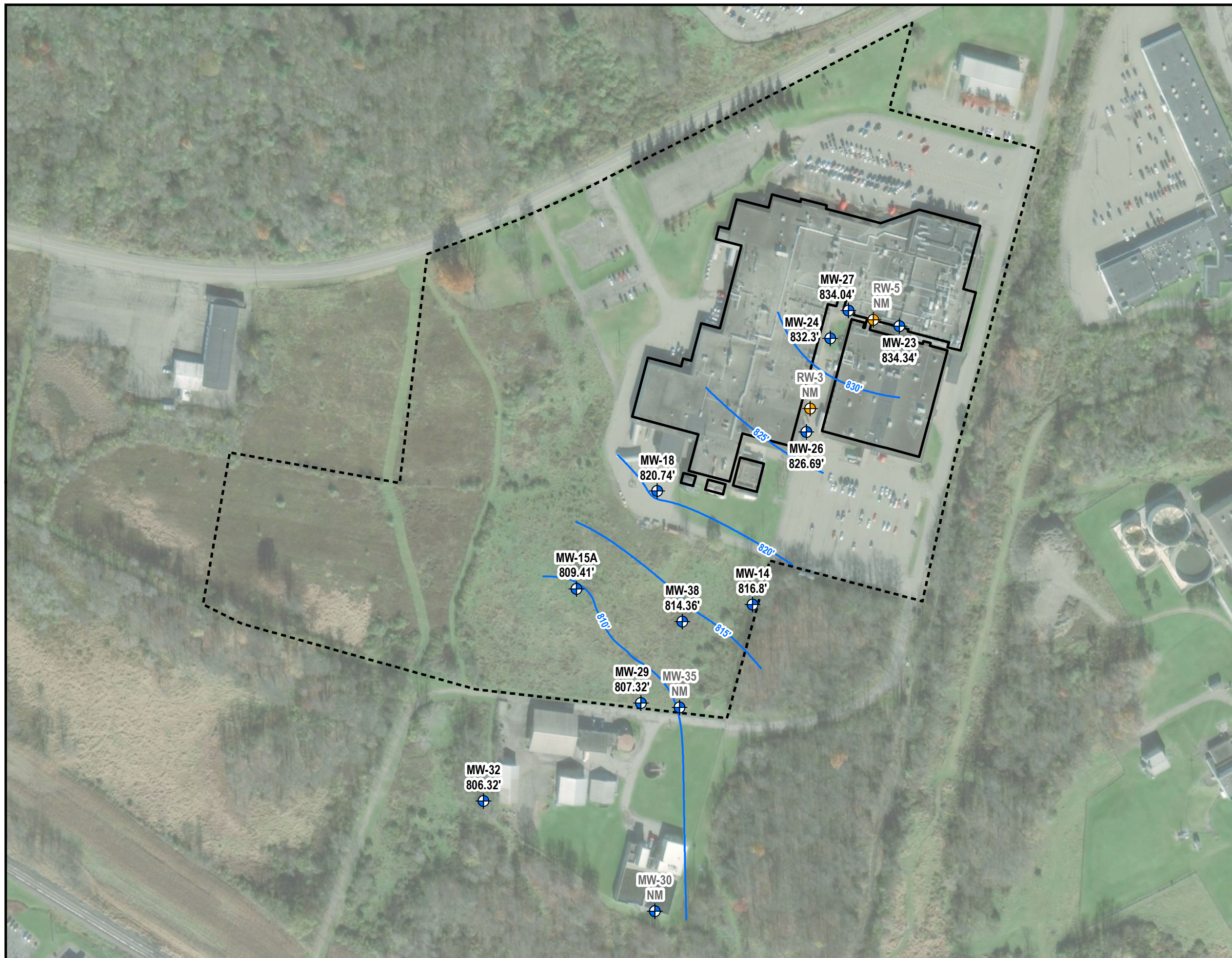


Figure 3: Shallow Overburden Groundwater Contour Map
Sanmina
Owego, NY





Legend

- Deep Overburden Monitoring Well
- Deep Overburden Recovery Well
- 839.83'** October 2018 Groundwater Elevation (ft)
- Groundwater Elevation Contours (ft)
- Building Outline
- Robintech Compudyne Site Boundary

NOTES:

- Groundwater elevation was measured on 24 October, 2018
- NM = Not measured
- Aerial Imagery: ESRI World Imagery, Reproduced under license with ArcGIS 10

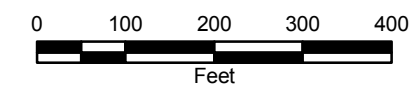
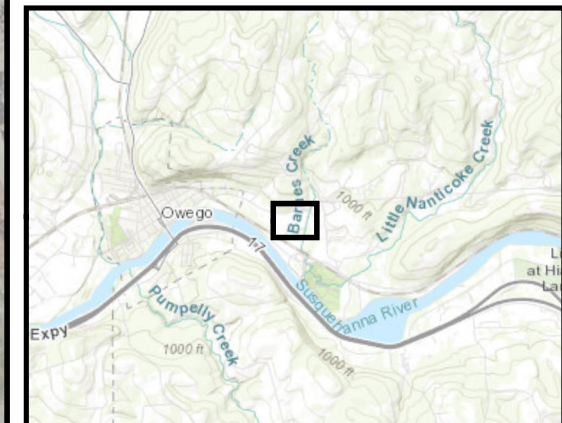
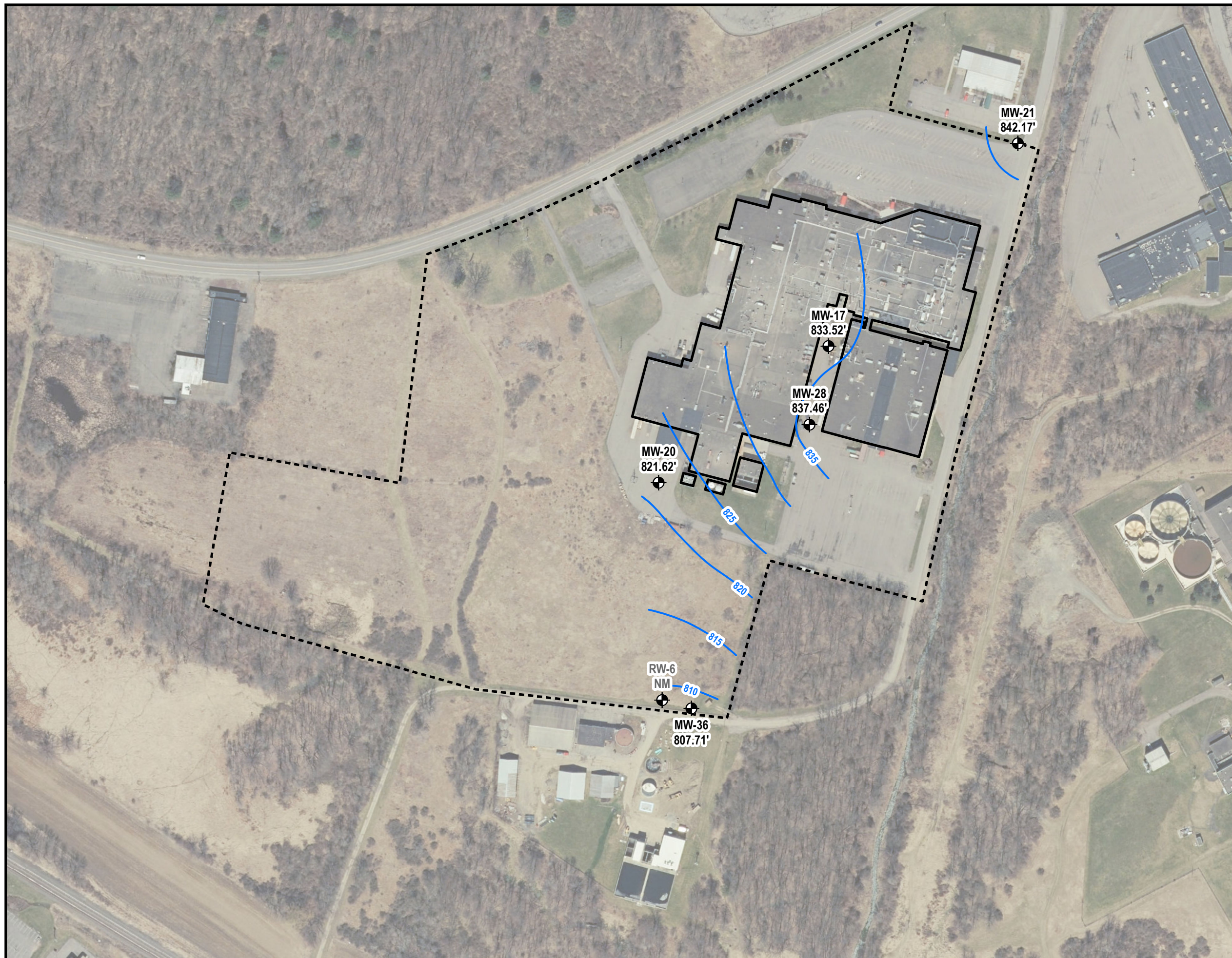


Figure 4: Deep Overburden Groundwater Contour Map
Sanmina
Owego, NY





Legend

- Bedrock Monitoring Well
- 839.83' October 2018 Groundwater Elevation (ft)
- Groundwater Elevation Contours (ft)
- Building Outline
- Robintech Compudyne Site Boundary

NOTES:

- Groundwater elevation was measured on 24 October, 2018
- NM = Not measured
- Aerial Imagery: ESRI World Imagery, Reproduced under license with ArcGIS 10

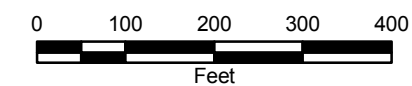
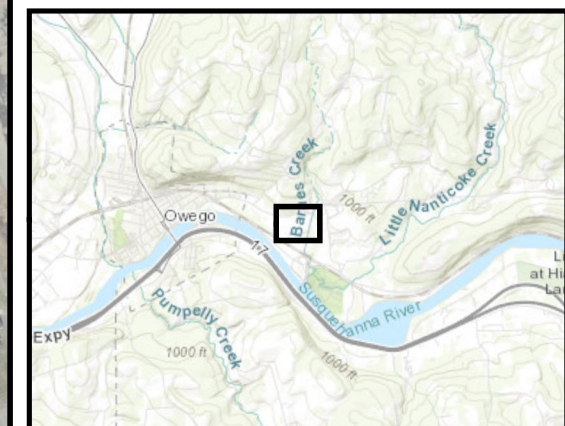


Figure 5: Bedrock Groundwater Contour Map
Sanmina
Owego, NY





Legend

- Shallow Overburden Monitoring Well
- Shallow Overburden Recovery Well
- Deep Overburden Monitoring Well
- Bedrock Monitoring Well
- Bedrock Recovery Well
- Building Outline
- Robintech Compydyne Site Boundary

NOTES:

- PFOA = Perfluorooctanoic Acid
- PFOS = Perfluorooctanesulfonic Acid
- ng/L = nanogram per Liter
- Aerial Imagery: ESRI World Imagery, Reproduced under license with ArcGIS 10

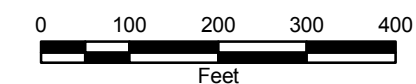
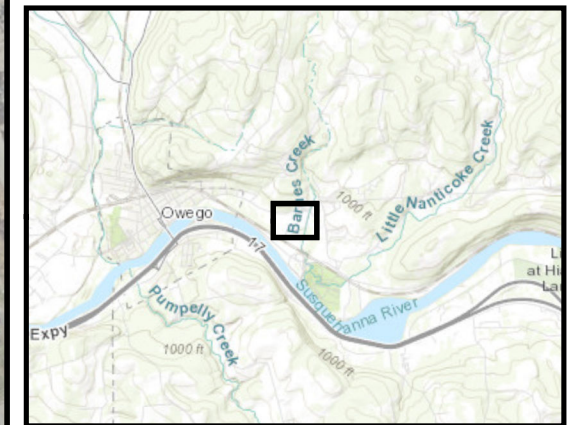


Figure 6: Groundwater PFOA and PFOS Analytical Results

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Owego, NY





Legend

- Shallow Overburden Monitoring Well
- Shallow Overburden Recovery Well
- Deep Overburden Monitoring Well
- Bedrock Monitoring Well
- Bedrock Recovery Well
- Building Outline
- Robintech Compydyne Site Boundary

NOTES:

- ng/L = nanogram per Liter
- Aerial Imagery: ESRI World Imagery, Reproduced under license with ArcGIS 10

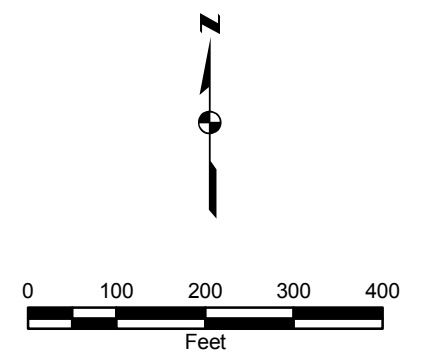


Figure 7: Groundwater 1,4-Dioxane Analytical Results
 Sanmina
 Owego, NY



TABLES

Table 1
Groundwater Analytical Summary
Robintech/Compudyne, Inc.
Owego, New York

Analyte	Well Designation Date Sampled Unit	MW-14 25-Oct-18	MW-15A 24-Oct-18	MW-27 25-Oct-18	MW-32 24-Oct-18	MW-33A 24-Oct-18	MW-34 25-Oct-18	MW-36 25-Oct-18	MW-4 25-Oct-18	MW-6 25-Oct-18	MW-8 24-Oct-18	RW-3 24-Oct-18	RW-4 24-Oct-18	RW-4 24-Oct-18	RW-6 24-Oct-18
Method 8270D-SIM, ng/l															
1,4-Dioxane	ng/l	644	379	182	964	< 147	453	1,110	< 153	2,890	< 153	3,540	15,700	14,000	2,670
Method E537 MODIFIED, ng/l															
6:2 Fluorotelomersulfonic acid (6:2 FTS)	ng/l	< 1.98	< 1.89	< 1.88	< 1.90	< 1.86	< 1.92	< 1.95	< 1.92	< 1.96	< 1.93	< 2.01	86.7	23.2	< 2.06
8:2 Fluorotelomersulfonic acid (8:2 FTS)	ng/l	< 1.98	< 1.89	< 1.88	< 1.90	< 1.86	< 1.92	< 1.95	< 1.92	< 1.96	< 1.93	< 2.01	< 1.81	< 1.89	< 2.06
N-ethyl perfluorooctanesulfonamidoacetic acid	ng/l	< 1.98	< 1.89	< 1.88	< 1.90	3.20	< 1.92	< 1.95	< 1.92	< 1.96	< 1.93	< 2.01	< 1.81	< 1.89	< 2.06
N-Methyl perfluorooctanesulfonamidoacetic acid	ng/l	< 1.98	< 1.89	< 1.88	< 1.90	< 1.86	< 1.92	< 1.95	< 1.92	< 1.96	< 1.93	< 2.01	< 1.81	< 1.89	< 2.06
Pentadecafluorooctanoic acid	ng/l	5.01	5.08	3.11	< 1.90	22.0	3.37	1.87 J	< 1.92	3.25	< 1.93	2.40	7.75	7.73	3.39
Perfluorobutanesulfonic acid	ng/l	1.11 J	1.70 J	1.83 J	< 1.90	8.17	< 1.92	< 1.95	< 1.92	1.73 J	< 1.93	1.14 J	1.25 J	1.36 J	0.605 J
Perfluorobutanoic acid	ng/l	1.81 J	3.94	1.34 J	0.962 J	8.96	3.45	1.37 J	< 1.92	2.05	3.31	1.44 J	2.23	2.26	1.51 J
Perfluorodecane sulfonic acid	ng/l	< 1.98	< 1.89	< 1.88	< 1.90	< 1.86	< 1.92	< 1.95	< 1.92	< 1.96	< 1.93	< 2.01	< 1.81	< 1.89	< 2.06
Perfluorodecanoic acid	ng/l	0.726 J	< 1.89	< 1.88	< 1.90	2.32	< 1.92	< 1.95	< 1.92	< 1.96	< 1.93	< 2.01	< 1.81	< 1.89	< 2.06
Perfluorododecanoic acid	ng/l	< 1.98	< 1.89	< 1.88	< 1.90	< 1.86	< 1.92	< 1.95	< 1.92	< 1.96	< 1.93	< 2.01	< 1.81	< 1.89	< 2.06
Perfluoroheptanesulfonic acid	ng/l	< 1.98	< 1.89	< 1.88	< 1.90	0.773 J	< 1.92	< 1.95	< 1.92	< 1.96	< 1.93	< 2.01	3.22	3.60	< 2.06
Perfluoroheptanoic acid	ng/l	1.76 J	1.78 J	1.12 J	< 1.90	9.24	3.55	< 1.95	< 1.92	1.16 J	< 1.93	0.735 J	1.78 J	1.83 J	1.28 J
Perfluorohexane-1-sulphonic acid	ng/l	1.05 J	0.875 J	< 1.88	< 1.90	3.99	< 1.92	< 1.95	< 1.92	< 1.96	< 1.93	< 2.01	3.97	3.27	0.881 J
Perfluorohexanoic acid	ng/l	1.63 J	2.20	1.10 J	< 1.90	12.1	6.63	< 1.95	< 1.92	1.70 J	< 1.93	0.759 J	2.27	2.37	1.34 J
Perfluorononanoic acid (PFOA)	ng/l	2.28	1.26 J	< 1.88	< 1.90	9.60	< 1.92	< 1.95	< 1.92	0.996 J	< 1.93	< 2.01	0.500 J	0.538 J	0.741 J
Perfluorooctanesulfonamide	ng/l	< 1.98	< 1.89	< 1.88	< 1.90	0.647 J	< 1.92	< 1.95	< 1.92	< 1.96	< 1.93	< 2.01	< 1.81	< 1.89	< 2.06
Perfluorooctanesulfonic acid (PFOS)	ng/l	32.5	11.9	3.73	< 1.90	56.0	< 1.92	6.08	0.996 J	6.85	< 1.93	5.48	39.0	41.0	7.60
Perfluoropentanoic acid	ng/l	1.45 J	2.57	1.20 J	< 1.90	13.5	9.46	< 1.95	< 1.92	1.89 J	< 1.93	0.948 J	2.38	2.35	1.46 J
Perfluorotetradecanoic acid	ng/l	< 1.98	< 1.89	< 1.88	< 1.90	< 1.86	< 1.92	< 1.95	< 1.92	< 1.96	< 1.93	< 2.01	< 1.81	< 1.89	< 2.06
Perfluorotridecanoic acid	ng/l	< 1.98	< 1.89	< 1.88	< 1.90	< 1.86	< 1.92	< 1.95	< 1.92	< 1.96	< 1.93	< 2.01	< 1.81	< 1.89	< 2.06
Perfluoroundecanoic acid	ng/l	< 1.98	< 1.89	< 1.88	< 1.90	10.2	< 1.92	< 1.95	< 1.92	< 1.96	< 1.93	< 2.01	< 1.81	< 1.89	< 2.06
Sum of PFOA+PFOS detections	ng/l	34.78	14.10	3.73	< 3.80	65.60	9.46	< 3.80	0.996 J	7.85	< 3.86	5.48	39.50	41.50	8.34

Notes:
< = Compound not detected at concentrationsabove the laboratory reporting detection limit.The laboratory reporting detection limit is shown.
Empty cells = Not analyzed
ng/l= nanograms per liter or equivalent to parts per trillion
Units are in ng/l = nanograms per liter
J = Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively (ALPWE)

APPENDIX A: LABORATORY REPORT



ANALYTICAL REPORT

Lab Number:	L1843787
Client:	ERM, Inc. 5784 Wide Waters Parkway Syracuse, NY 13214
ATTN:	Rob Sents
Phone:	(315) 445-2553
Project Name:	SANMINA GW
Project Number:	0482594
Report Date:	11/15/18

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: SANMINA GW

Project Number: 0482594

Lab Number: L1843787

Report Date: 11/15/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1843787-01	SAN-RW-4 (10242018)	WATER	OWEGO, NY	10/24/18 10:45	10/25/18
L1843787-02	SAN-RW-6 (10242018)	WATER	OWEGO, NY	10/24/18 13:35	10/25/18
L1843787-03	SAN-MW-33A (10242018)	WATER	OWEGO, NY	10/24/18 12:55	10/25/18
L1843787-04	SAN-MW-32 (10242018)	WATER	OWEGO, NY	10/24/18 14:12	10/25/18
L1843787-05	SAN-RW-3 (10242018)	WATER	OWEGO, NY	10/24/18 15:30	10/25/18
L1843787-06	SAN-DUP (10242018)	WATER	OWEGO, NY	10/24/18 12:00	10/25/18
L1843787-07	SAN-PDB (10242018)	WATER	OWEGO, NY	10/24/18 13:13	10/25/18
L1843787-08	SAN-MW-15A (10242018)	WATER	OWEGO, NY	10/24/18 17:20	10/25/18
L1843787-09	SAN-EB (10242018)	WATER	OWEGO, NY	10/24/18 18:00	10/25/18
L1843787-10	SAN-MW-8 (10242018)	WATER	OWEGO, NY	10/24/18 18:10	10/25/18
L1843787-11	SAN-MW-34 (10252018)	WATER	OWEGO, NY	10/25/18 08:41	10/25/18
L1843787-12	SAN-MW-36 (10252018)	WATER	OWEGO, NY	10/25/18 10:48	10/25/18
L1843787-13	SAN-MW-14 (10252018)	WATER	OWEGO, NY	10/25/18 11:07	10/25/18
L1843787-14	SAN-MW-27 (10252018)	WATER	OWEGO, NY	10/25/18 15:05	10/25/18
L1843787-15	SAN-MW-6 (10252018)	WATER	OWEGO, NY	10/25/18 15:33	10/25/18
L1843787-16	SAN-MW-4 (10252018)	WATER	OWEGO, NY	10/25/18 16:50	10/25/18

Project Name: SANMINA GW
Project Number: 0482594

Lab Number: L1843787
Report Date: 11/15/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: SANMINA GW
Project Number: 0482594

Lab Number: L1843787
Report Date: 11/15/18

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

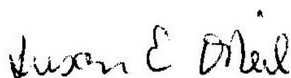
Perfluorinated Alkyl Acids by Isotope Dilution

L1843787-10, -12, -13, -14, -15, and -16: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1178485-3: The continuing calibration standard, associated with L1843787 as well as the associated QC, had the response for Perfluorohexanesulfonic Acid-Branched (br-PFHxS) (46.3%) outside the acceptance criteria for the method. The response for Perfluorohexanesulfonic Acid-Total (PFHxS) (87.8%), therefore no further action was taken.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 11/15/18

ORGANICS

SEMIVOLATILES

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-01
 Client ID: SAN-RW-4 (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 10:45
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 14:01
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	15700		ng/l	153	76.5	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	29			15-110		

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-01
 Client ID: SAN-RW-4 (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 10:45
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/10/18 01:20
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 10/30/18 09:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.23		ng/l	1.81	0.338	1
Perfluoropentanoic Acid (PFPeA)	2.38		ng/l	1.81	0.420	1
Perfluorobutanesulfonic Acid (PFBS)	1.25	J	ng/l	1.81	0.344	1
Perfluorohexanoic Acid (PFHxA)	2.27		ng/l	1.81	0.446	1
Perfluoroheptanoic Acid (PFHpA)	1.78	J	ng/l	1.81	0.337	1
Perfluorohexanesulfonic Acid (PFHxS)	3.97		ng/l	1.81	0.395	1
Perfluorooctanoic Acid (PFOA)	7.75		ng/l	1.81	0.417	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	86.7		ng/l	1.81	0.176	1
Perfluoroheptanesulfonic Acid (PFHpS)	3.22		ng/l	1.81	0.471	1
Perfluorononanoic Acid (PFNA)	0.500	J	ng/l	1.81	0.395	1
Perfluorooctanesulfonic Acid (PFOS)	39.0		ng/l	1.81	0.507	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.562	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	0.263	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.81	0.227	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.384	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	0.350	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	0.504	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.81	0.338	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.536	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	0.284	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.81	0.895	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-01
 Client ID: SAN-RW-4 (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 10:45
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	118		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	112		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	129		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	119		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	195		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	93		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	117		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	54		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-02
 Client ID: SAN-RW-6 (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 13:35
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 14:31
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	2670		ng/l	153	76.5	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	27			15-110		

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-02
 Client ID: SAN-RW-6 (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 13:35
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/10/18 01:37
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 10/30/18 09:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.51	J	ng/l	2.06	0.384	1
Perfluoropentanoic Acid (PFPeA)	1.46	J	ng/l	2.06	0.477	1
Perfluorobutanesulfonic Acid (PFBS)	0.605	J	ng/l	2.06	0.391	1
Perfluorohexanoic Acid (PFHxA)	1.34	J	ng/l	2.06	0.506	1
Perfluoroheptanoic Acid (PFHpA)	1.28	J	ng/l	2.06	0.383	1
Perfluorohexanesulfonic Acid (PFHxS)	0.881	J	ng/l	2.06	0.448	1
Perfluorooctanoic Acid (PFOA)	3.39		ng/l	2.06	0.473	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.06	0.200	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.06	0.535	1
Perfluorononanoic Acid (PFNA)	0.741	J	ng/l	2.06	0.448	1
Perfluorooctanesulfonic Acid (PFOS)	7.60		ng/l	2.06	0.576	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.06	0.638	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.06	0.299	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.06	0.258	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.06	0.436	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.06	0.397	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.06	0.572	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.06	0.384	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.06	0.609	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.06	0.323	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.06	1.02	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-02

Date Collected: 10/24/18 13:35

Client ID: SAN-RW-6 (10242018)

Date Received: 10/25/18

Sample Location: OWEGO, NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	123		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	126		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	75		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	64		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	45		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-03
 Client ID: SAN-MW-33A (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 12:55
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 16:00
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	147	73.5	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	26			15-110		

Project Name: SANMINA GW

Project Number: 0482594

Lab Number: L1843787

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-03
 Client ID: SAN-MW-33A (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 12:55
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/10/18 02:43
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 10/30/18 09:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	8.96		ng/l	1.86	0.347	1
Perfluoropentanoic Acid (PFPeA)	13.5		ng/l	1.86	0.431	1
Perfluorobutanesulfonic Acid (PFBS)	8.17		ng/l	1.86	0.353	1
Perfluorohexanoic Acid (PFHxA)	12.1		ng/l	1.86	0.457	1
Perfluoroheptanoic Acid (PFHpA)	9.24		ng/l	1.86	0.346	1
Perfluorohexanesulfonic Acid (PFHxS)	3.99		ng/l	1.86	0.405	1
Perfluorooctanoic Acid (PFOA)	22.0		ng/l	1.86	0.428	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.86	0.180	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.773	J	ng/l	1.86	0.483	1
Perfluorononanoic Acid (PFNA)	9.60		ng/l	1.86	0.405	1
Perfluorooctanesulfonic Acid (PFOS)	56.0		ng/l	1.86	0.520	1
Perfluorodecanoic Acid (PFDA)	2.32		ng/l	1.86	0.576	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.86	0.270	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	0.233	1
Perfluoroundecanoic Acid (PFUnA)	10.2		ng/l	1.86	0.394	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.86	0.359	1
Perfluorooctanesulfonamide (FOSA)	0.647	J	ng/l	1.86	0.517	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.20		ng/l	1.86	0.346	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.550	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	0.292	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.86	0.918	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-03

Date Collected: 10/24/18 12:55

Client ID: SAN-MW-33A (10242018)

Date Received: 10/25/18

Sample Location: OWEGO, NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	130		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	79		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	46		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	42		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-04
 Client ID: SAN-MW-32 (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 14:12
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 16:30
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	964.		ng/l	147	73.5	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	24			15-110		

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-04
 Client ID: SAN-MW-32 (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 14:12
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/10/18 03:00
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 10/30/18 09:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.962	J	ng/l	1.90	0.355	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.90	0.441	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.90	0.361	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.90	0.468	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.90	0.354	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.90	0.414	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.90	0.437	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.90	0.184	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.90	0.494	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.90	0.414	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.90	0.532	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.90	0.589	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.90	0.276	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.90	0.238	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.90	0.403	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.90	0.367	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.90	0.528	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.90	0.354	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.90	0.563	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.90	0.298	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.90	0.939	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-04

Date Collected: 10/24/18 14:12

Client ID: SAN-MW-32 (10242018)

Date Received: 10/25/18

Sample Location: OWEGO, NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	63		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	130		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	62		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	57		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	47		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-05
 Client ID: SAN-RW-3 (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 15:30
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 17:00
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	3540		ng/l	163	81.5	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	28			15-110		

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-05
 Client ID: SAN-RW-3 (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 15:30
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/10/18 03:16
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 10/30/18 09:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.44	J	ng/l	2.01	0.375	1
Perfluoropentanoic Acid (PFPeA)	0.948	J	ng/l	2.01	0.466	1
Perfluorobutanesulfonic Acid (PFBS)	1.14	J	ng/l	2.01	0.382	1
Perfluorohexanoic Acid (PFHxA)	0.759	J	ng/l	2.01	0.494	1
Perfluoroheptanoic Acid (PFHpA)	0.735	J	ng/l	2.01	0.373	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.01	0.438	1
Perfluorooctanoic Acid (PFOA)	2.40		ng/l	2.01	0.462	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.01	0.195	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.01	0.522	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.01	0.438	1
Perfluorooctanesulfonic Acid (PFOS)	5.48		ng/l	2.01	0.562	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.01	0.622	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.01	0.292	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.01	0.251	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.01	0.426	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.01	0.388	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.01	0.558	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.01	0.374	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.01	0.594	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.01	0.315	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.01	0.992	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-05
 Client ID: SAN-RW-3 (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 15:30
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	123		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	107		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	64		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	48		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	45		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	41		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	62		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-06
 Client ID: SAN-DUP (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 12:00
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 17:32
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	14000		ng/l	153	76.5	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	28			15-110		

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-06
 Client ID: SAN-DUP (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 12:00
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/10/18 03:33
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 10/30/18 09:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.26		ng/l	1.89	0.353	1
Perfluoropentanoic Acid (PFPeA)	2.35		ng/l	1.89	0.439	1
Perfluorobutanesulfonic Acid (PFBS)	1.36	J	ng/l	1.89	0.360	1
Perfluorohexanoic Acid (PFHxA)	2.37		ng/l	1.89	0.466	1
Perfluoroheptanoic Acid (PFHpA)	1.83	J	ng/l	1.89	0.352	1
Perfluorohexanesulfonic Acid (PFHxS)	3.27		ng/l	1.89	0.413	1
Perfluorooctanoic Acid (PFOA)	7.73		ng/l	1.89	0.436	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	23.2		ng/l	1.89	0.184	1
Perfluoroheptanesulfonic Acid (PFHpS)	3.60		ng/l	1.89	0.492	1
Perfluorononanoic Acid (PFNA)	0.538	J	ng/l	1.89	0.413	1
Perfluorooctanesulfonic Acid (PFOS)	41.0		ng/l	1.89	0.530	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.89	0.587	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	0.275	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.237	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.402	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.366	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.526	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.353	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.561	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.297	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.89	0.936	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-06

Date Collected: 10/24/18 12:00

Client ID: SAN-DUP (10242018)

Date Received: 10/25/18

Sample Location: OWEGO, NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	111		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	125		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	178		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	41		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	45		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	56		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	46		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-07
 Client ID: SAN-PDB (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 13:13
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/10/18 03:49
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 10/30/18 09:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.80	0.336	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.80	0.417	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.342	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.80	0.442	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.334	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	0.392	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	0.414	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	0.174	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.468	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.392	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.80	0.504	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.558	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	0.262	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.225	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.381	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.347	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.500	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.335	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.532	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.282	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.888	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-07
 Client ID: SAN-PDB (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 13:13
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	116		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	135		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	130		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	111		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	86		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	65		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	46		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	45		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	62		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	56		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-08
 Client ID: SAN-MW-15A (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 17:20
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 18:03
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	379.		ng/l	153	76.5	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	24			15-110		

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-08
 Client ID: SAN-MW-15A (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 17:20
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/10/18 04:06
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 10/30/18 09:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.94		ng/l	1.89	0.353	1
Perfluoropentanoic Acid (PFPeA)	2.57		ng/l	1.89	0.439	1
Perfluorobutanesulfonic Acid (PFBS)	1.70	J	ng/l	1.89	0.360	1
Perfluorohexanoic Acid (PFHxA)	2.20		ng/l	1.89	0.466	1
Perfluoroheptanoic Acid (PFHpA)	1.78	J	ng/l	1.89	0.352	1
Perfluorohexanesulfonic Acid (PFHxS)	0.875	J	ng/l	1.89	0.413	1
Perfluorooctanoic Acid (PFOA)	5.08		ng/l	1.89	0.436	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	0.184	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	0.492	1
Perfluorononanoic Acid (PFNA)	1.26	J	ng/l	1.89	0.413	1
Perfluorooctanesulfonic Acid (PFOS)	11.9		ng/l	1.89	0.530	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.89	0.587	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	0.275	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.237	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.402	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.366	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.526	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.353	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.561	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.297	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.89	0.936	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-08
 Client ID: SAN-MW-15A (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 17:20
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	113		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	133		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	126		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	74		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	62		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	49		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	39		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-09
 Client ID: SAN-EB (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 18:00
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 18:34
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	156	78.1	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	24			15-110		

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-09
 Client ID: SAN-EB (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 18:00
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/10/18 04:22
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 10/30/18 09:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.98	0.370	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.98	0.460	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.98	0.377	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.98	0.488	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.98	0.369	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.98	0.432	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.98	0.456	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.98	0.192	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.516	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.98	0.432	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.98	0.556	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.615	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	0.288	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.98	0.248	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.421	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.383	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.98	0.552	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.370	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.587	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.312	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.980	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-09
 Client ID: SAN-EB (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 18:00
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	117		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	139		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	116		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	139		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	122		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	61		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	52		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-10
 Client ID: SAN-MW-8 (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 18:10
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 19:05
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	153	76.5	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	22			15-110		

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-10
 Client ID: SAN-MW-8 (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 18:10
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/12/18 18:12
 Analyst: PB

Extraction Method: EPA 537
 Extraction Date: 11/01/18 13:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.31		ng/l	1.93	0.360	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.93	0.448	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.93	0.367	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.93	0.475	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.93	0.359	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.93	0.421	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.93	0.444	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.93	0.187	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.93	0.502	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.93	0.421	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.93	0.540	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.93	0.598	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.93	0.281	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.93	0.242	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.93	0.409	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.93	0.372	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.93	0.537	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.93	0.360	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.93	0.571	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.93	0.303	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.93	0.954	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-10
 Client ID: SAN-MW-8 (10242018)
 Sample Location: OWEGO, NY

Date Collected: 10/24/18 18:10
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	119		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	185	Q	16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	109		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	135		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	261	Q	1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	140		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	46		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-11
 Client ID: SAN-MW-34 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 08:41
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 19:37
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	453.		ng/l	153	76.5	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	28			15-110		

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-11
 Client ID: SAN-MW-34 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 08:41
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/12/18 18:29
 Analyst: PB

Extraction Method: EPA 537
 Extraction Date: 11/01/18 13:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.45		ng/l	1.92	0.359	1
Perfluoropentanoic Acid (PFPeA)	9.46		ng/l	1.92	0.446	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.92	0.365	1
Perfluorohexanoic Acid (PFHxA)	6.63		ng/l	1.92	0.473	1
Perfluoroheptanoic Acid (PFHpA)	3.55		ng/l	1.92	0.358	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.92	0.419	1
Perfluorooctanoic Acid (PFOA)	3.37		ng/l	1.92	0.442	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.92	0.186	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.92	0.500	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.92	0.419	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.92	0.538	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.92	0.596	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	0.280	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.241	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.408	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.371	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.535	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.358	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.569	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.302	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.950	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-11
 Client ID: SAN-MW-34 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 08:41
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	119		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	162		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	123		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	122		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	119		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	135		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	118		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	106		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-12
 Client ID: SAN-MW-36 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 10:48
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 20:08
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	1110		ng/l	150	75.0	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	25			15-110		

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-12
 Client ID: SAN-MW-36 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 10:48
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/12/18 18:45
 Analyst: PB

Extraction Method: EPA 537
 Extraction Date: 11/01/18 13:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.37	J	ng/l	1.95	0.364	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.95	0.453	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.95	0.371	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.95	0.480	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.95	0.363	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.95	0.426	1
Perfluorooctanoic Acid (PFOA)	1.87	J	ng/l	1.95	0.449	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.95	0.189	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.95	0.508	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.95	0.426	1
Perfluorooctanesulfonic Acid (PFOS)	6.08		ng/l	1.95	0.547	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.95	0.605	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.95	0.284	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.95	0.244	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.95	0.414	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.95	0.377	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.95	0.543	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.95	0.364	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.95	0.578	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.95	0.307	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.95	0.965	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-12
 Client ID: SAN-MW-36 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 10:48
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	123		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	197	Q	16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	124		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	121		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	118		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	133		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	114		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	63		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	55		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	24		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	54		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	65		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-13
 Client ID: SAN-MW-14 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 11:07
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 20:40
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	644.		ng/l	153	76.5	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	24			15-110		

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-13
 Client ID: SAN-MW-14 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 11:07
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/12/18 19:02
 Analyst: PB

Extraction Method: EPA 537
 Extraction Date: 11/01/18 13:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.81	J	ng/l	1.98	0.370	1
Perfluoropentanoic Acid (PFPeA)	1.45	J	ng/l	1.98	0.460	1
Perfluorobutanesulfonic Acid (PFBS)	1.11	J	ng/l	1.98	0.377	1
Perfluorohexanoic Acid (PFHxA)	1.63	J	ng/l	1.98	0.488	1
Perfluoroheptanoic Acid (PFHpA)	1.76	J	ng/l	1.98	0.369	1
Perfluorohexanesulfonic Acid (PFHxS)	1.05	J	ng/l	1.98	0.432	1
Perfluorooctanoic Acid (PFOA)	5.01		ng/l	1.98	0.456	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.98	0.192	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.516	1
Perfluorononanoic Acid (PFNA)	2.28		ng/l	1.98	0.432	1
Perfluorooctanesulfonic Acid (PFOS)	32.5		ng/l	1.98	0.556	1
Perfluorodecanoic Acid (PFDA)	0.726	J	ng/l	1.98	0.615	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	0.288	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.98	0.248	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.421	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.383	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.98	0.552	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.370	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.587	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.312	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.980	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-13
 Client ID: SAN-MW-14 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 11:07
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	123		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	195	Q	16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	122		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	124		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	121		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	132		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	122		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	115		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-14
 Client ID: SAN-MW-27 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 15:05
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 21:11
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	182.		ng/l	153	76.5	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	24			15-110		

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-14
 Client ID: SAN-MW-27 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 15:05
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/12/18 19:51
 Analyst: PB

Extraction Method: EPA 537
 Extraction Date: 11/01/18 13:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	1.34	J	ng/l	1.88	0.351	1
Perfluoropentanoic Acid (PFPeA)	1.20	J	ng/l	1.88	0.436	1
Perfluorobutanesulfonic Acid (PFBS)	1.83	J	ng/l	1.88	0.357	1
Perfluorohexanoic Acid (PFHxA)	1.10	J	ng/l	1.88	0.462	1
Perfluoroheptanoic Acid (PFHpA)	1.12	J	ng/l	1.88	0.350	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.88	0.410	1
Perfluorooctanoic Acid (PFOA)	3.11		ng/l	1.88	0.432	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.88	0.182	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.88	0.489	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.88	0.410	1
Perfluorooctanesulfonic Acid (PFOS)	3.73		ng/l	1.88	0.526	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.88	0.583	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.88	0.273	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.88	0.235	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.88	0.398	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.88	0.363	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.88	0.522	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.88	0.350	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.88	0.556	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.88	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.88	0.928	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-14
 Client ID: SAN-MW-27 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 15:05
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	125		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	203	Q	16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	123		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	124		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	123		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	139		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	119		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	76		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-15
 Client ID: SAN-MW-6 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 15:33
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 21:42
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	2890		ng/l	153	76.5	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	25			15-110		

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-15
 Client ID: SAN-MW-6 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 15:33
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/12/18 20:08
 Analyst: PB

Extraction Method: EPA 537
 Extraction Date: 11/01/18 13:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.05		ng/l	1.96	0.366	1
Perfluoropentanoic Acid (PFPeA)	1.89	J	ng/l	1.96	0.455	1
Perfluorobutanesulfonic Acid (PFBS)	1.73	J	ng/l	1.96	0.372	1
Perfluorohexanoic Acid (PFHxA)	1.70	J	ng/l	1.96	0.482	1
Perfluoroheptanoic Acid (PFHpA)	1.16	J	ng/l	1.96	0.365	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.96	0.427	1
Perfluorooctanoic Acid (PFOA)	3.25		ng/l	1.96	0.451	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.96	0.190	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.96	0.510	1
Perfluorononanoic Acid (PFNA)	0.996	J	ng/l	1.96	0.427	1
Perfluorooctanesulfonic Acid (PFOS)	6.85		ng/l	1.96	0.549	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.96	0.608	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.96	0.285	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.96	0.245	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.96	0.416	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.96	0.378	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.96	0.545	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.96	0.365	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.96	0.580	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.96	0.308	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.96	0.969	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-15
 Client ID: SAN-MW-6 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 15:33
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	125		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	197	Q	16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	124		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	124		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	119		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	135		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	121		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	98		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	120		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	60		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	57		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	62		33-143

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**SAMPLE RESULTS**

Lab ID: L1843787-16
 Client ID: SAN-MW-4 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 16:50
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 22:13
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,4 Dioxane by 8270D-SIM - Mansfield Lab						
1,4-Dioxane	ND		ng/l	153	76.5	1
Surrogate	% Recovery		Qualifier	Acceptance Criteria		
1,4-Dioxane-d8	27			15-110		

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-16
 Client ID: SAN-MW-4 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 16:50
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 122,537(M)
 Analytical Date: 11/12/18 20:25
 Analyst: PB

Extraction Method: EPA 537
 Extraction Date: 11/01/18 13:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.92	0.359	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.92	0.446	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.92	0.365	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.92	0.473	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.92	0.358	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.92	0.419	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.92	0.442	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.92	0.186	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.92	0.500	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.92	0.419	1
Perfluorooctanesulfonic Acid (PFOS)	0.996	J	ng/l	1.92	0.538	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.92	0.596	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	0.280	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.241	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.408	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.371	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.535	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.358	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.569	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.302	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.950	1

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

SAMPLE RESULTS

Lab ID: L1843787-16
 Client ID: SAN-MW-4 (10252018)
 Sample Location: OWEGO, NY

Date Collected: 10/25/18 16:50
 Date Received: 10/25/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	123		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	183	Q	16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	122		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	119		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	119		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	131		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	118		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	97		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	114		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	120		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	113		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	117		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	65		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	79		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		33-143

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)
 Analytical Date: 11/09/18 22:35
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 10/30/18 09:56

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-09 Batch: WG1173825-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.373
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.464
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.380
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.492
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.372
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.436
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.460
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.520
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.436
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.560
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.620
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.250
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.424
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.386
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.556
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.592
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.314
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.988

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)
 Analytical Date: 11/09/18 22:35
 Analyst: AJ

Extraction Method: EPA 537
 Extraction Date: 10/30/18 09:56

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-09 Batch: WG1173825-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	117		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	105		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	116		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	134		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	115		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	69		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	82		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	66		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97		33-143

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

Method Blank Analysis Batch Quality Control

Analytical Method: 1,8270D-SIM
 Analytical Date: 11/01/18 12:33
 Analyst: PS

Extraction Method: EPA 3510C
 Extraction Date: 10/31/18 13:45

Parameter	Result	Qualifier	Units	RL	MDL
1,4 Dioxane by 8270D-SIM - Mansfield Lab for sample(s): 01-06,08-16 Batch: WG1174421-1					
1,4-Dioxane	ND		ng/l	150	75.0

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	31		15-110

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)
 Analytical Date: 11/12/18 15:43
 Analyst: PB

Extraction Method: EPA 537
 Extraction Date: 11/01/18 13:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 10-16 Batch: WG1174808-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.373
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.464
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.380
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.492
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.372
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.436
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.460
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.520
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.436
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.560
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.620
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.250
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.424
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.386
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.556
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.592
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.314
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.988

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)
 Analytical Date: 11/12/18 15:43
 Analyst: PB

Extraction Method: EPA 537
 Extraction Date: 11/01/18 13:20

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 10-16 Batch: WG1174808-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	123		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	134		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	128		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	124		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	118		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	147		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	119		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	124		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	111		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	122		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	114		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	112		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	115		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	102		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	103		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82		33-143

Lab Control Sample Analysis

Batch Quality Control

Project Name: SANMINA GW

Project Number: 0482594

Lab Number: L1843787

Report Date: 11/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-09 Batch: WG1173825-2 WG1173825-3								
Perfluorobutanoic Acid (PFBA)	93		94		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	94		96		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	99		103		65-157	4		30
Perfluorohexanoic Acid (PFHxA)	99		101		69-168	2		30
Perfluoroheptanoic Acid (PFHpA)	88		88		58-159	0		30
Perfluorohexanesulfonic Acid (PFHxS)	90		88		69-177	2		30
Perfluorooctanoic Acid (PFOA)	89		92		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	98		100		49-187	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	97		88		61-179	10		30
Perfluorononanoic Acid (PFNA)	94		96		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	87		76		52-151	13		30
Perfluorodecanoic Acid (PFDA)	96		97		63-171	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	86		94		56-173	9		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	91		93		60-166	2		30
Perfluoroundecanoic Acid (PFUnA)	84		86		60-153	2		30
Perfluorodecanesulfonic Acid (PFDS)	107		108		38-156	1		30
Perfluorooctanesulfonamide (FOSA)	82		84		46-170	2		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	87		87		45-170	0		30
Perfluorododecanoic Acid (PFDoA)	89		92		67-153	3		30
Perfluorotridecanoic Acid (PFTrDA)	97		99		48-158	2		30
Perfluorotetradecanoic Acid (PFTA)	103		99		59-182	4		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: SANMINA GW

Project Number: 0482594

Lab Number: L1843787

Report Date: 11/15/18

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-09 Batch: WG1173825-2 WG1173825-3

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	117		122		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		115		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		114		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106		109		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	118		121		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	136		145		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	122		122		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	78		80		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		111		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	116		127		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	111		118		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		78		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	95		104		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	121		124		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	69		84		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91		90		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	103		106		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	100		108		33-143

Lab Control Sample Analysis Batch Quality Control

Project Name: SANMINA GW

Project Number: 0482594

Lab Number: L1843787

Report Date: 11/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab Associated sample(s): 01-06,08-16 Batch: WG1174421-2 WG1174421-3								
1,4-Dioxane	100		100		40-140	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,4-Dioxane-d8	42		33		15-110

Lab Control Sample Analysis **Batch Quality Control**

Project Name: SANMINA GW

Project Number: 0482594

Lab Number: L1843787

Report Date: 11/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 10-16 Batch: WG1174808-2 WG1174808-3								
Perfluorobutanoic Acid (PFBA)	110		110		67-148	0		30
Perfluoropentanoic Acid (PFPeA)	110		110		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	120		122		65-157	2		30
Perfluorohexanoic Acid (PFHxA)	115		115		69-168	0		30
Perfluoroheptanoic Acid (PFHpA)	103		103		58-159	0		30
Perfluorohexanesulfonic Acid (PFHxS)	100		102		69-177	2		30
Perfluorooctanoic Acid (PFOA)	103		106		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	110		109		49-187	1		30
Perfluoroheptanesulfonic Acid (PFHpS)	114		105		61-179	8		30
Perfluorononanoic Acid (PFNA)	108		108		68-171	0		30
Perfluorooctanesulfonic Acid (PFOS)	94		96		52-151	2		30
Perfluorodecanoic Acid (PFDA)	115		113		63-171	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	120		109		56-173	10		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	105		105		60-166	0		30
Perfluoroundecanoic Acid (PFUnA)	103		103		60-153	0		30
Perfluorodecanesulfonic Acid (PFDS)	110		111		38-156	1		30
Perfluorooctanesulfonamide (FOSA)	94		100		46-170	6		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	107		108		45-170	1		30
Perfluorododecanoic Acid (PFDoA)	108		107		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	97		97		48-158	0		30
Perfluorotetradecanoic Acid (PFTA)	116		116		59-182	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: SANMINA GW

Project Number: 0482594

Lab Number: L1843787

Report Date: 11/15/18

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 10-16 Batch: WG1174808-2 WG1174808-3								

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	124		119		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	134		128		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	133		117		31-159
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	130		121		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	125		116		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	148		132		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	126		117		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	132		118		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	120		112		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	133		118		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	120		121		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	129		112		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	116		117		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	123		122		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	75		70		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	113		116		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	110		109		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		88		33-143

Matrix Spike Analysis

Batch Quality Control

Project Name: SANMINA GW

Project Number: 0482594

Lab Number: L1843787

Report Date: 11/15/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-09 QC Batch ID: WG1173825-6 WG1173825-7 QC Sample: L1843787-02 Client ID: SAN-RW-6 (10242018)												
Perfluorobutanoic Acid (PFBA)	1.51J	39.1	38.2	98		37.0	92		67-148	3		30
Perfluoropentanoic Acid (PFPeA)	1.46J	39.1	38.7	99		37.7	94		63-161	3		30
Perfluorobutanesulfonic Acid (PFBS)	0.605J	39.1	42.1	108		40.7	101		65-157	3		30
Perfluorohexanoic Acid (PFHxA)	1.34J	39.1	41.0	105		39.3	98		69-168	4		30
Perfluoroheptanoic Acid (PFHpA)	1.28J	39.1	36.6	94		34.5	86		58-159	6		30
Perfluorohexanesulfonic Acid (PFHxS)	0.881J	39.1	34.7	89		35.8	89		69-177	3		30
Perfluorooctanoic Acid (PFOA)	3.39	39.1	40.2	94		39.1	89		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	39.1	34.8	89		35.7	89		49-187	3		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	39.1	37.6	96		35.7	89		61-179	5		30
Perfluorononanoic Acid (PFNA)	0.741J	39.1	39.2	100		36.5	91		68-171	7		30
Perfluorooctanesulfonic Acid (PFOS)	7.60	39.1	37.3	76		36.5	72		52-151	2		30
Perfluorodecanoic Acid (PFDA)	ND	39.1	37.9	97		36.9	92		63-171	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	39.1	36.3	93		34.6	86		56-173	5		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	39.1	34.0	87		36.8	92		60-166	8		30
Perfluoroundecanoic Acid (PFUnA)	ND	39.1	33.3	85		32.7	81		60-153	2		30
Perfluorodecanesulfonic Acid (PFDS)	ND	39.1	36.9	94		39.8	99		38-156	8		30
Perfluorooctanesulfonamide (FOSA)	ND	39.1	33.5	86		31.0	77		46-170	8		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	39.1	29.8	76		26.7	66		45-170	11		30
Perfluorododecanoic Acid (PFDoA)	ND	39.1	35.1	90		34.9	87		67-153	1		30
Perfluorotridecanoic Acid (PFTrDA)	ND	39.1	36.3	93		34.9	87		48-158	4		30
Perfluorotetradecanoic Acid (PFTA)	ND	39.1	40.6	104		34.6	86		59-182	16		30

Matrix Spike Analysis**Batch Quality Control****Project Name:** SANMINA GW**Project Number:** 0482594**Lab Number:** L1843787**Report Date:** 11/15/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-09 QC Batch ID: WG1173825-6 WG1173825-7 QC Sample: L1843787-02 Client ID: SAN-RW-6 (10242018)												

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	61		64		7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	79		70		1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	49		49		23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56		51		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		91		40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		89		38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		83		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		100		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	141		131		47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		76		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		87		33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		88		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	119		106		16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		20		1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	116		110		42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106		102		36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		93		34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		101		31-159

Matrix Spike Analysis

Batch Quality Control

Project Name: SANMINA GW

Lab Number: L1843787

Project Number: 0482594

Report Date: 11/15/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
1,4 Dioxane by 8270D-SIM - Mansfield Lab SAN-RW-6 (10242018) Associated sample(s): 01-06,08-16 QC Batch ID: WG1174421-4 WG1174421-5 QC Sample: L1843787-02 Client ID:												
1,4-Dioxane	2670	5320	8310	106		8420	110		40-140	1		30

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
1,4-Dioxane-d8	29		24		15-110

Project Name: SANMINA GW**Lab Number:** L1843787**Project Number:** 0482594**Report Date:** 11/15/18**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
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A	Absent
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B	Absent
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C	Absent
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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1843787-01A	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-01B	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-01C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-01D	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-02A	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-02B	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-02C	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-02D	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-02E	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-02F	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-02G	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-02H	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-02I	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-02J	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-02K	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-02L	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-03A	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-03B	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-03C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-03D	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-04A	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1843787-04B	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-04C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-04D	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-05A	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-05B	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-05C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-05D	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-06A	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-06B	Amber 500ml unpreserved	A	NA		2.7	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-06C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-06D	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-07A	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-07B	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-08A	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-08B	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-08C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-08D	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-09A	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-09B	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-09C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-09D	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-10A	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-10B	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-10C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-10D	2 Plastic/1 Plastic/1 H2O Plastic	A	NA		2.7	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-11A	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-11B	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-11C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1843787-11D	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-12A	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-12B	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-12C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-12D	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-13A	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-13B	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-13C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-13D	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-14A	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-14B	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-14C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-14D	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-15A	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-15B	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-15C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-15D	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-16A	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-16B	Amber 500ml unpreserved	B	NA		3.5	Y	Absent		A2-1,4-DIOXANE-SIM(7)
L1843787-16C	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)
L1843787-16D	2 Plastic/1 Plastic/1 H2O Plastic	C	NA		2.6	Y	Absent		A2-NY-537-ISOTOPE(14)

Project Name: SANMINA GW
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GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: DU Report with 'J' Qualifiers



Project Name: SANMINA GW
Project Number: 0482594

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Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.Facility: **Company-wide**Department: **Quality Assurance**Title: **Certificate/Approval Program Summary**ID No.: **17873**

Revision 12

Published Date: 10/9/2018 4:58:19 PM

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Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624/624.1:** m/p-xylene, o-xylene**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**EPA 6860:** SCM: Perchlorate**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility****SM 2540D:** TSS**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,****EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.****Mansfield Facility:****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg. EPA 522.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

 NEW YORK CHAIN OF CUSTODY		Service Centers Mahwah, NJ 07430: 35 Whitney Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 105		Page <u>1</u> of <u>2</u>		Date Rec'd in Lab <u>10/26/18</u>		ALPHA Job # <u>11843787</u>								
		Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193		Mansfield, MA 02048 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288		Project Information Project Name: <u>Sammima GW</u> Project Location: <u>Owego, NY</u> Project # <u>0482594</u> (Use Project name as Project #) ☐ Project Manager: <u>Rob Sents</u> ALPHAQuote #: Turn-Around Time Standard ☒ Rush (only if pre approved) ☐ Due Date: # of Days:		Deliverables ☐ ASP-A ☒ ASP-B ☐ EQUIS (1 File) ☒ EQUIS (4 File) ☐ Other		Billing Information ☒ Same as Client Info PO #						
Client Information Client: <u>ERM</u> Address: <u>5784 Widewater Pkwy</u> <u>Syracuse, NY 13214</u> Phone: <u>315-445-2554</u> Fax: <u>eddoerm.com</u> Email: <u>rob.sents@erm.com</u>		Regulatory Requirement ☐ NY TOGS ☐ NY Part 375 ☐ AWQ Standards ☐ NY CP-51 ☐ NY Restricted Use ☐ Other ☐ NY Unrestricted Use ☐ NYC Sewer Discharge		Disposal Site Information Please identify below location of applicable disposal facilities. Disposal Facility: ☐ NJ ☐ NY ☐ Other:		Other project specific requirements/comments: Please specify Metals or TAL.		ANALYSIS PFAA: EPA37 1,4-Dioxane 82705141		Sample Filtration ☐ Done ☐ Lab to do Preservation ☐ Lab to do (Please Specify below) Sample Specific Comments		Total Bottles				
ALPHA Lab ID (Lab Use Only)		Sample ID		Collection Date Time		Sample Matrix		Sampler's Initials		Container Type			Preservative		Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)	
43787-01		SAN-RW-4(10242018)		10-24-18 1045		GW		mf		X			X			
-02		SAN-RW-6(10242018)		1335		GW		TD		X			X			
-03		SAN-MW-33A(10242018)		1255		GW		mf		X			X		MS/MSD	
-04		SAN-MW-32(10242018)		1412		GW		mf		X			X			
-05		SAN-RW-3(10242018)		1530		GW		TD		X			X			
-06		SAN-DUP(10242018)		1200		GW		mf		X			X			
-07		SAN-PDB(10242018)		1313		LW		mf		X						
-08		SAN-MW-15A(10242018)		1720		GW		mf		X			X			
-09		SAN-MW-8(10242018)				GW		mf		X		X				
-10		SAN-EB(10242018)		1800		LW		TD		X		X				
Preservative Code: A = None B = HCl C = HNO ₃ D = H ₂ SO ₄ E = NaOH F = MeOH G = NaHSO ₄ H = Na ₂ S ₂ O ₃ K/E = Zn Ac/NaOH O = Other		Container Code P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle		Westboro: Certification No: MA935 Mansfield: Certification No: MA015		Relinquished By: <u>Bill Mutch</u> Date/Time: <u>10/25/18 1854</u>		Received By: <u>Bill Mutch</u> Date/Time: <u>10/25/18 19:56</u>		Date/Time: <u>10/25/18 19:56</u>		Date/Time: <u>10/25/18 19:56</u>		Date/Time: <u>10/26/18 0610</u>		

APPENDIX B: DATA USABILITY SUMMARY REPORT

DATA USABILITY SUMMARY REPORT (DUSR)

Site: Sanmina GW, Oswego, New York

Date: December 11, 2018

SDG : L1843787

Laboratory: Alpha Analytical, Westborough, Massachusetts

EDS Sample ID	Client Sample ID	Laboratory Sample Numbers	Matrix
01	SAN-RW-4 (10242018)	L1843787-01	Water
02	SAN-RW-6 (10242018)	L1843787-02	Water
03	SAN-MW-33A (10242018)	L1843787-03	Water
04	SAN-MW-32 (10242018)	L1843787-04	Water
05	SAN-RW-3 (10242018)	L1843787-05	Water
06	SAN-DUP (10242018)	L1843787-06	Water
07*	SAN-PDB (10242018)	L1843787-07	Water
08	SAN-MW-15A (10242018)	L1843787-08	Water
09	SAN-EB (10242018)	L1843787-09	Water
10	SAN-MW-8 (10242018)	L1843787-10	Water
11	SAN-MW-34 (10252018)	L1843787-11	Water
12	SAN-MW-36 (10252018)	L1843787-12	Water
13	SAN-MW-14 (10252018)	L1843787-13	Water
14	SAN-MW-27 (10252018)	L1843787-14	Water
15	SAN-MW-6 (10252018)	L1843787-15	Water
16	SAN-MW-4 (10252018)	L1843787-16	Water

* - PFCs only

Note (s): The laboratory reports positively identified results between the reporting limit (RL) and the method detection limit (MDL) with a J. These results are considered estimated, however still valid and useable for project objectives.

SEMIOLATILE ORGANIC COMPOUNDS (1,4-DIOXANE)

USEPA SW-846 Method 8270D-SIM

The analytical method, the NYSDEC ASP, the USEPA CLP National Functional Guidelines for Organic Data Review (January 2017), and the reviewer's professional judgment were used in evaluating the data in this summary report.

Holding Times (HT) - All HT criteria were met.

Surrogate Spikes - All samples exhibited acceptable surrogate spike percent recoveries (%R).

Matrix Spike/Matrix Spike Duplicate (MS/MSD) - MS/MSD sample SAN-RW-6 (10242018) exhibited acceptable percent recoveries (%R) and RPD values.

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) - All LCS/LCSD %R and RPD values met QC criteria.

Method Blank (MB) - The method blanks exhibited no target compounds.

Equipment Blank (EB) - Equipment blank sample SAN-EB (10242018) was free of target compounds.

Initial Calibration (ICAL) - The initial calibrations exhibited acceptable %RSD and/or correlation coefficients and mean RRF values.

Continuing Calibration (CCAL) - The continuing calibrations exhibited acceptable percent difference (%D) and RRF values.

Internal Standard (IS) Area Performance - All internal standards met area response and retention time (RT) criteria.

Field Duplicate - The field duplicate samples exhibited acceptable precision.

Compound	SAN-RW-4 ng/L	SAN-DUP ng/L	RPD	Qualifier
1,4-Dioxane	15700	14000	11%	None

Sample Analysis - All criteria were met.

PERFLUORINATED COMPOUNDS (PFCs)

USEPA Method 537 Modified

The analytical method, the NYSDEC ASP, the USEPA CLP National Functional Guidelines for Organic Data Review (January 2017), and the reviewer's professional judgment were used in evaluating the data in this summary report.

Holding Times (HT) - All HT criteria were met.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) - The MS/MSD sample SAN-RW-6 (10242018) exhibited acceptable percent recoveries (%R) and RPD values.

Laboratory Control Sample (LCS) - All %R values met QC criteria.

Method Blank (MB) - The method blanks exhibited no target compounds.

Equipment Blank (EB) - Equipment blank sample SAN-EB (10242018) was free of target compounds.

Initial Calibration (ICAL) - The ICAL exhibited acceptable %RSD and/or correlation coefficients.

Continuing Calibration (CCV) - The CCVs exhibited acceptable percent recoveries (%R).

Surrogate Recoveries - All samples exhibited acceptable surrogate recoveries except for the following.

EDS Sample ID	Surrogate	%R	Qualifier
10	M5PFPEA	185%	None - Associated Compound ND
	M2-6:2FTS	261%	
12	M5PFPEA	197%	None - Associated Compound ND
13	M5PFPEA	195%	J
14	M5PFPEA	203%	J
15	M5PFPEA	197%	J
16	M5PFPEA	183%	None - Associated Compound ND

Internal Standards - All internal standards met area response and retention time (RT) criteria.

Field Duplicate - The field duplicate samples exhibited unacceptable precision for 6:2FTS and both results have been qualified as estimated (J).

Compound	SAN-RW-4 ng/L	SAN-DUP ng/L	RPD	Qualifier
PFBA	2.23	2.26	1%	None
PFPeA	2.38	2.35	1%	
PFBS	1.25	1.36	8%	
PFHxA	2.27	2.37	4%	
PFHpA	1.78	1.83	3%	
PFHxS	3.97	3.27	19%	
PFOA	7.75	7.73	0%	
6:2FTS	86.7	23.2	116%	J
PFHpS	3.22	3.60	11%	None
PFNA	0.500	0.538	7%	
PFOS	39.0	41.0	5%	

Sample Analysis - All criteria were met.

Data Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The analyte is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limits is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the samples.

Form 1

SemiVolatile Organics

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-01
 Client ID : SAN-RW-4 (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 1,8270D-SIM
 Lab File ID : F611011808
 Sample Amount : 490 ml
 Extraction Method : EPA 3510C
 Extract Volume : 5000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 10:45
 Date Received : 10/25/18
 Date Analyzed : 11/01/18 14:01
 Date Extracted : 10/31/18
 Dilution Factor : 1
 Analyst : PS
 Instrument ID : GCMS6
 GC Column : RTX-5
 %Solids : N/A
 Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	15700	153	76.5	



Form 1

SemiVolatile Organics

2

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-02
 Client ID : SAN-RW-6 (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 1,8270D-SIM
 Lab File ID : F611011809
 Sample Amount : 490 ml
 Extraction Method : EPA 3510C
 Extract Volume : 5000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 13:35
 Date Received : 10/25/18
 Date Analyzed : 11/01/18 14:31
 Date Extracted : 10/31/18
 Dilution Factor : 1
 Analyst : PS
 Instrument ID : GCMS6
 GC Column : RTX-5
 %Solids : N/A
 Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	2670	153	76.5	

Form 1

SemiVolatile Organics

3

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-03
 Client ID : SAN-MW-33A (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 1,8270D-SIM
 Lab File ID : F611011812
 Sample Amount : 510 ml
 Extraction Method : EPA 3510C
 Extract Volume : 5000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 12:55
 Date Received : 10/25/18
 Date Analyzed : 11/01/18 16:00
 Date Extracted : 10/31/18
 Dilution Factor : 1
 Analyst : PS
 Instrument ID : GCMS6
 GC Column : RTX-5
 %Solids : N/A
 Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	ND	147	73.5	U

11/21/18



Form 1

SemiVolatile Organics

4

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-04
 Client ID : SAN-MW-32 (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 1,8270D-SIM
 Lab File ID : F611011813
 Sample Amount : 510 ml
 Extraction Method : EPA 3510C
 Extract Volume : 5000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 14:12
 Date Received : 10/25/18
 Date Analyzed : 11/01/18 16:30
 Date Extracted : 10/31/18
 Dilution Factor : 1
 Analyst : PS
 Instrument ID : GCMS6
 GC Column : RTX-5
 %Solids : N/A
 Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	964.	147	73.5	

11/21/18



Form 1

SemiVolatile Organics

5

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-05
 Client ID : SAN-RW-3 (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 1,8270D-SIM
 Lab File ID : F611011814
 Sample Amount : 460 ml
 Extraction Method : EPA 3510C
 Extract Volume : 5000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 15:30
 Date Received : 10/25/18
 Date Analyzed : 11/01/18 17:00
 Date Extracted : 10/31/18
 Dilution Factor : 1
 Analyst : PS
 Instrument ID : GCMS6
 GC Column : RTX-5
 %Solids : N/A
 Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	3540	163	81.5	

rw121118



Form 1

SemiVolatile Organics

6

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-06
 Client ID : SAN-DUP (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 1,8270D-SIM
 Lab File ID : F611011815
 Sample Amount : 490 ml
 Extraction Method : EPA 3510C
 Extract Volume : 5000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 12:00
 Date Received : 10/25/18
 Date Analyzed : 11/01/18 17:32
 Date Extracted : 10/31/18
 Dilution Factor : 1
 Analyst : PS
 Instrument ID : GCMS6
 GC Column : RTX-5
 %Solids : N/A
 Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	14000	153	76.5	

11/21/18



Form 1

SemiVolatile Organics

8

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-08
 Client ID : SAN-MW-15A (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 1,8270D-SIM
 Lab File ID : F611011816
 Sample Amount : 490 ml
 Extraction Method : EPA 3510C
 Extract Volume : 5000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 17:20
 Date Received : 10/25/18
 Date Analyzed : 11/01/18 18:03
 Date Extracted : 10/31/18
 Dilution Factor : 1
 Analyst : PS
 Instrument ID : GCMS6
 GC Column : RTX-5
 %Solids : N/A
 Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	379.	153	76.5	

11/21/18



Form 1

SemiVolatile Organics

9

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-09
 Client ID : SAN-EB (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 1,8270D-SIM
 Lab File ID : F611011817
 Sample Amount : 480 ml
 Extraction Method : EPA 3510C
 Extract Volume : 5000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 18:00
 Date Received : 10/25/18
 Date Analyzed : 11/01/18 18:34
 Date Extracted : 10/31/18
 Dilution Factor : 1
 Analyst : PS
 Instrument ID : GCMS6
 GC Column : RTX-5
 %Solids : N/A
 Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	ND	156	78.1	U

11/21/18



Form 1

SemiVolatile Organics

10

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-10
 Client ID : SAN-MW-8 (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 1,8270D-SIM
 Lab File ID : F611011818
 Sample Amount : 490 ml
 Extraction Method : EPA 3510C
 Extract Volume : 5000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 18:10
 Date Received : 10/25/18
 Date Analyzed : 11/01/18 19:05
 Date Extracted : 10/31/18
 Dilution Factor : 1
 Analyst : PS
 Instrument ID : GCMS6
 GC Column : RTX-5
 %Solids : N/A
 Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	ND	153	76.5	U

11/21/18



Form 1

SemiVolatile Organics

11

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-11
 Client ID : SAN-MW-34 (10252018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 1,8270D-SIM
 Lab File ID : F611011819
 Sample Amount : 490 ml
 Extraction Method : EPA 3510C
 Extract Volume : 5000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/25/18 08:41
 Date Received : 10/25/18
 Date Analyzed : 11/01/18 19:37
 Date Extracted : 10/31/18
 Dilution Factor : 1
 Analyst : PS
 Instrument ID : GCMS6
 GC Column : RTX-5
 %Solids : N/A
 Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	453.	153	76.5	

rev. 2/11/18



Form 1

SemiVolatile Organics

12

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-12
 Client ID : SAN-MW-36 (10252018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 1,8270D-SIM
 Lab File ID : F611011820
 Sample Amount : 500 ml
 Extraction Method : EPA 3510C
 Extract Volume : 5000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/25/18 10:48
 Date Received : 10/25/18
 Date Analyzed : 11/01/18 20:08
 Date Extracted : 10/31/18
 Dilution Factor : 1
 Analyst : PS
 Instrument ID : GCMS6
 GC Column : RTX-5
 %Solids : N/A
 Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	1110	150	75.0	

mw 12/1/18



Form 1 SemiVolatile Organics

13

Client : ERM, Inc.
Project Name : SANMINA GW
Lab ID : L1843787-13
Client ID : SAN-MW-14 (10252018)
Sample Location : OWEGO, NY
Sample Matrix : WATER
Analytical Method : 1,8270D-SIM
Lab File ID : F611011821
Sample Amount : 490 ml
Extraction Method : EPA 3510C
Extract Volume : 5000 uL
GPC Cleanup : N

Lab Number : L1843787
Project Number : 0482594
Date Collected : 10/25/18 11:07
Date Received : 10/25/18
Date Analyzed : 11/01/18 20:40
Date Extracted : 10/31/18
Dilution Factor : 1
Analyst : PS
Instrument ID : GCMS6
GC Column : RTX-5
%Solids : N/A
Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	644.	153	76.5	

mw121418



Form 1

SemiVolatile Organics

14

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-14
 Client ID : SAN-MW-27 (10252018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 1,8270D-SIM
 Lab File ID : F611011822
 Sample Amount : 490 ml
 Extraction Method : EPA 3510C
 Extract Volume : 5000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/25/18 15:05
 Date Received : 10/25/18
 Date Analyzed : 11/01/18 21:11
 Date Extracted : 10/31/18
 Dilution Factor : 1
 Analyst : PS
 Instrument ID : GCMS6
 GC Column : RTX-5
 %Solids : N/A
 Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	182.	153	76.5	

11/2/18



Form 1

SemiVolatile Organics

15

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-15
 Client ID : SAN-MW-6 (10252018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 1,8270D-SIM
 Lab File ID : F611011823
 Sample Amount : 490 ml
 Extraction Method : EPA 3510C
 Extract Volume : 5000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/25/18 15:33
 Date Received : 10/25/18
 Date Analyzed : 11/01/18 21:42
 Date Extracted : 10/31/18
 Dilution Factor : 1
 Analyst : PS
 Instrument ID : GCMS6
 GC Column : RTX-5
 %Solids : N/A
 Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	2890	153	76.5	

new 12/1/18



16

Form 1
SemiVolatile Organics

Client : ERM, Inc.
Project Name : SANMINA GW
Lab ID : L1843787-16
Client ID : SAN-MW-4 (10252018)
Sample Location : OWEGO, NY
Sample Matrix : WATER
Analytical Method : 1,8270D-SIM
Lab File ID : F611011824
Sample Amount : 490 ml
Extraction Method : EPA 3510C
Extract Volume : 5000 uL
GPC Cleanup : N

Lab Number : L1843787
Project Number : 0482594
Date Collected : 10/25/18 16:50
Date Received : 10/25/18
Date Analyzed : 11/01/18 22:13
Date Extracted : 10/31/18
Dilution Factor : 1
Analyst : PS
Instrument ID : GCMS6
GC Column : RTX-5
%Solids : N/A
Injection Volume : 1 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
123-91-1	1,4-Dioxane	ND	153	76.5	U

Form 1

SemiVolatile Organics

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-01
 Client ID : SAN-RW-4 (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12132
 Sample Amount : 276 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 10:45
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 01:20
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	2.23	1.81	0.338	
2706-90-3	Perfluoropentanoic Acid (PFPeA)	2.38	1.81	0.420	
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	1.25	1.81	0.344	J
307-24-4	Perfluorohexanoic Acid (PFHxA)	2.27	1.81	0.446	
375-85-9	Perfluoroheptanoic Acid (PFHpA)	1.78	1.81	0.337	J
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	3.97	1.81	0.395	
335-67-1	Perfluorooctanoic Acid (PFOA)	7.75	1.81	0.417	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	86.7 J	1.81	0.176	
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	3.22	1.81	0.471	
375-95-1	Perfluorononanoic Acid (PFNA)	0.500	1.81	0.395	J
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	39.0	1.81	0.507	
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.81	0.562	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.81	0.263	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.81	0.227	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.81	0.384	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.81	0.350	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.81	0.504	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.81	0.338	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.81	0.536	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.81	0.284	U

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Form 1

SemiVolatile Organics

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-01
 Client ID : SAN-RW-4 (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12132
 Sample Amount : 276 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 10:45
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 01:20
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.81	0.895	U

Form 1

SemiVolatile Organics

2

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-02
 Client ID : SAN-RW-6 (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12133
 Sample Amount : 243 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 13:35
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 01:37
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	1.51	2.06	0.384	J
2706-90-3	Perfluoropentanoic Acid (PFPeA)	1.46	2.06	0.477	J
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	0.605	2.06	0.391	J
307-24-4	Perfluorohexanoic Acid (PFHxA)	1.34	2.06	0.506	J
375-85-9	Perfluoroheptanoic Acid (PFHpA)	1.28	2.06	0.383	J
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	0.881	2.06	0.448	J
335-67-1	Perfluorooctanoic Acid (PFOA)	3.39	2.06	0.473	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	2.06	0.200	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	2.06	0.535	U
375-95-1	Perfluorononanoic Acid (PFNA)	0.741	2.06	0.448	J
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	7.60	2.06	0.576	
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	2.06	0.638	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	2.06	0.299	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	2.06	0.258	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	2.06	0.436	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	2.06	0.397	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	2.06	0.572	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	2.06	0.384	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	2.06	0.609	U
72629-94-8	Perfluorotridecanoic Acid (PFTrDA)	ND	2.06	0.323	U



mw 12/11/18

Form 1

SemiVolatile Organics

2

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-02
 Client ID : SAN-RW-6 (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12133
 Sample Amount : 243 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 13:35
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 01:37
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	2.06	1.02	U

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Form 1

SemiVolatile Organics

3

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-03
 Client ID : SAN-MW-33A (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12137
 Sample Amount : 269 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 12:55
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 02:43
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	8.96	1.86	0.347	
2706-90-3	Perfluoropentanoic Acid (PFPeA)	13.5	1.86	0.431	
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	8.17	1.86	0.353	
307-24-4	Perfluorohexanoic Acid (PFHxA)	12.1	1.86	0.457	
375-85-9	Perfluoroheptanoic Acid (PFHpA)	9.24	1.86	0.346	
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	3.99	1.86	0.405	
335-67-1	Perfluorooctanoic Acid (PFOA)	22.0	1.86	0.428	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.86	0.180	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.773	1.86	0.483	J
375-95-1	Perfluorononanoic Acid (PFNA)	9.60	1.86	0.405	
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	56.0	1.86	0.520	
335-76-2	Perfluorodecanoic Acid (PFDA)	2.32	1.86	0.576	
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.86	0.270	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.86	0.233	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	10.2	1.86	0.394	
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.86	0.359	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	0.647	1.86	0.517	J
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.20	1.86	0.346	
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.86	0.550	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.86	0.292	U

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Form 1

SemiVolatile Organics

3

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-03
 Client ID : SAN-MW-33A (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12137
 Sample Amount : 269 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 12:55
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 02:43
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.86	0.918	U

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Form 1 SemiVolatile Organics

4

Client : ERM, Inc.
Project Name : SANMINA GW
Lab ID : L1843787-04
Client ID : SAN-MW-32 (10242018)
Sample Location : OWEGO, NY
Sample Matrix : WATER
Analytical Method : 122,537(M)
Lab File ID : I12138
Sample Amount : 263 ml
Extraction Method : EPA 537
Extract Volume : 1000 uL
GPC Cleanup : N

Lab Number : L1843787
Project Number : 0482594
Date Collected : 10/24/18 14:12
Date Received : 10/25/18
Date Analyzed : 11/10/18 03:00
Date Extracted : 10/30/18
Dilution Factor : 1
Analyst : AJ
Instrument ID : LCMS01
GC Column : Acquity UPLC BEH C18
%Solids : N/A
Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	0.962	1.90	0.355	J
2706-90-3	Perfluoropentanoic Acid (PFPeA)	ND	1.90	0.441	U
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	ND	1.90	0.361	U
307-24-4	Perfluorohexanoic Acid (PFHxA)	ND	1.90	0.468	U
375-85-9	Perfluoroheptanoic Acid (PFHpA)	ND	1.90	0.354	U
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.90	0.414	U
335-67-1	Perfluorooctanoic Acid (PFOA)	ND	1.90	0.437	U
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.90	0.184	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.90	0.494	U
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.90	0.414	U
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	ND	1.90	0.532	U
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.90	0.589	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.90	0.276	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.90	0.238	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.90	0.403	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.90	0.367	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.90	0.528	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.90	0.354	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.90	0.563	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.90	0.298	U

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Form 1

SemiVolatile Organics

4

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-04
 Client ID : SAN-MW-32 (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12138
 Sample Amount : 263 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 14:12
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 03:00
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.90	0.939	U

new 12/11/18



Form 1

SemiVolatile Organics

S

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-05
 Client ID : SAN-RW-3 (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12139
 Sample Amount : 249 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 15:30
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 03:16
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	1.44	2.01	0.375	J
2706-90-3	Perfluoropentanoic Acid (PFPeA)	0.948	2.01	0.466	J
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	1.14	2.01	0.382	J
307-24-4	Perfluorohexanoic Acid (PFHxA)	0.759	2.01	0.494	J
375-85-9	Perfluoroheptanoic Acid (PFHpA)	0.735	2.01	0.373	J
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	2.01	0.438	U
335-67-1	Perfluorooctanoic Acid (PFOA)	2.40	2.01	0.462	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	2.01	0.195	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	2.01	0.522	U
375-95-1	Perfluorononanoic Acid (PFNA)	ND	2.01	0.438	U
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	5.48	2.01	0.562	
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	2.01	0.622	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	2.01	0.292	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	2.01	0.251	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	2.01	0.426	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	2.01	0.388	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	2.01	0.558	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	2.01	0.374	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	2.01	0.594	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	2.01	0.315	U

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Form 1

SemiVolatile Organics

5

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-05
 Client ID : SAN-RW-3 (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12139
 Sample Amount : 249 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 15:30
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 03:16
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	2.01	0.992	U

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Form 1

SemiVolatile Organics

6

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-06
 Client ID : SAN-DUP (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12140
 Sample Amount : 264 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 12:00
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 03:33
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	2.26	1.89	0.353	
2706-90-3	Perfluoropentanoic Acid (PFPeA)	2.35	1.89	0.439	
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	1.36	1.89	0.360	J
307-24-4	Perfluorohexanoic Acid (PFHxA)	2.37	1.89	0.466	
375-85-9	Perfluoroheptanoic Acid (PFHpA)	1.83	1.89	0.352	J
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	3.27	1.89	0.413	
335-67-1	Perfluorooctanoic Acid (PFOA)	7.73	1.89	0.436	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	23.2 J	1.89	0.184	
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	3.60	1.89	0.492	
375-95-1	Perfluorononanoic Acid (PFNA)	0.538	1.89	0.413	J
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	41.0	1.89	0.530	
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.89	0.587	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.89	0.275	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.89	0.237	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.89	0.402	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.89	0.366	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.89	0.526	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.89	0.353	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.89	0.561	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.89	0.297	U

with 1.8



Form 1

SemiVolatile Organics

6

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-06
 Client ID : SAN-DUP (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12140
 Sample Amount : 264 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 12:00
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 03:33
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.89	0.936	U

11/21/18



Form 1

SemiVolatile Organics

7

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-07
 Client ID : SAN-PDB (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12141
 Sample Amount : 278 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 13:13
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 03:49
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	ND	1.80	0.336	U
2706-90-3	Perfluoropentanoic Acid (PFPeA)	ND	1.80	0.417	U
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	ND	1.80	0.342	U
307-24-4	Perfluorohexanoic Acid (PFHxA)	ND	1.80	0.442	U
375-85-9	Perfluoroheptanoic Acid (PFHpA)	ND	1.80	0.334	U
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.80	0.392	U
335-67-1	Perfluorooctanoic Acid (PFOA)	ND	1.80	0.414	U
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.80	0.174	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.80	0.468	U
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.80	0.392	U
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	ND	1.80	0.504	U
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.80	0.558	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.80	0.262	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.80	0.225	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.80	0.381	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.80	0.347	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.80	0.500	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.80	0.335	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.80	0.532	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.80	0.282	U

11/21/18



Form 1

SemiVolatile Organics

7

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-07
 Client ID : SAN-PDB (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12141
 Sample Amount : 278 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 13:13
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 03:49
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.80	0.888	U

10/21/18



Form 1

SemiVolatile Organics

8

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-08
 Client ID : SAN-MW-15A (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12142
 Sample Amount : 264 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 17:20
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 04:06
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	3.94	1.89	0.353	
2706-90-3	Perfluoropentanoic Acid (PFPeA)	2.57	1.89	0.439	
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	1.70	1.89	0.360	J
307-24-4	Perfluorohexanoic Acid (PFHxA)	2.20	1.89	0.466	
375-85-9	Perfluoroheptanoic Acid (PFHpA)	1.78	1.89	0.352	J
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	0.875	1.89	0.413	J
335-67-1	Perfluorooctanoic Acid (PFOA)	5.08	1.89	0.436	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.89	0.184	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.89	0.492	U
375-95-1	Perfluorononanoic Acid (PFNA)	1.26	1.89	0.413	J
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	11.9	1.89	0.530	
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.89	0.587	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.89	0.275	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.89	0.237	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.89	0.402	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.89	0.366	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.89	0.526	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.89	0.353	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.89	0.561	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.89	0.297	U

11/21/18



Form 1

SemiVolatile Organics

8

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-08
 Client ID : SAN-MW-15A (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I12142
 Sample Amount : 264 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 17:20
 Date Received : 10/25/18
 Date Analyzed : 11/10/18 04:06
 Date Extracted : 10/30/18
 Dilution Factor : 1
 Analyst : AJ
 Instrument ID : LCMS01
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.89	0.936	U

11/12/18



Form 1

SemiVolatile Organics

9

Client	: ERM, Inc.	Lab Number	: L1843787
Project Name	: SANMINA GW	Project Number	: 0482594
Lab ID	: L1843787-09	Date Collected	: 10/24/18 18:00
Client ID	: SAN-EB (10242018)	Date Received	: 10/25/18
Sample Location	: OWEGO, NY	Date Analyzed	: 11/10/18 04:22
Sample Matrix	: WATER	Date Extracted	: 10/30/18
Analytical Method	: 122,537(M)	Dilution Factor	: 1
Lab File ID	: I12143	Analyst	: AJ
Sample Amount	: 252 ml	Instrument ID	: LCMS01
Extraction Method	: EPA 537	GC Column	: Acquity UPLC BEH C18
Extract Volume	: 1000 uL	%Solids	: N/A
GPC Cleanup	: N	Injection Volume	: 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	ND	1.98	0.370	U
2706-90-3	Perfluoropentanoic Acid (PFPeA)	ND	1.98	0.460	U
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	ND	1.98	0.377	U
307-24-4	Perfluorohexanoic Acid (PFHxA)	ND	1.98	0.488	U
375-85-9	Perfluoroheptanoic Acid (PFHpA)	ND	1.98	0.369	U
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.98	0.432	U
335-67-1	Perfluorooctanoic Acid (PFOA)	ND	1.98	0.456	U
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.98	0.192	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.98	0.516	U
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.98	0.432	U
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	ND	1.98	0.556	U
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.98	0.615	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.98	0.288	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.98	0.248	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.98	0.421	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.98	0.383	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.98	0.552	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.98	0.370	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.98	0.587	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.98	0.312	U

11/21/18



Form 1

SemiVolatile Organics

9

Client	: ERM, Inc.	Lab Number	: L1843787
Project Name	: SANMINA GW	Project Number	: 0482594
Lab ID	: L1843787-09	Date Collected	: 10/24/18 18:00
Client ID	: SAN-EB (10242018)	Date Received	: 10/25/18
Sample Location	: OWEGO, NY	Date Analyzed	: 11/10/18 04:22
Sample Matrix	: WATER	Date Extracted	: 10/30/18
Analytical Method	: 122,537(M)	Dilution Factor	: 1
Lab File ID	: I12143	Analyst	: AJ
Sample Amount	: 252 ml	Instrument ID	: LCMS01
Extraction Method	: EPA 537	GC Column	: Acquity UPLC BEH C18
Extract Volume	: 1000 uL	%Solids	: N/A
GPC Cleanup	: N	Injection Volume	: 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.98	0.980	U

11/21/18



Form 1

SemiVolatile Organics

10

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-10
 Client ID : SAN-MW-8 (10242018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I0234
 Sample Amount : 259 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/24/18 18:10
 Date Received : 10/25/18
 Date Analyzed : 11/12/18 18:12
 Date Extracted : 11/01/18
 Dilution Factor : 1
 Analyst : PB
 Instrument ID : LCMS02
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	3.31	1.93	0.360	
2706-90-3	Perfluoropentanoic Acid (PFPeA)	ND	1.93	0.448	U
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	ND	1.93	0.367	U
307-24-4	Perfluorohexanoic Acid (PFHxA)	ND	1.93	0.475	U
375-85-9	Perfluoroheptanoic Acid (PFHpA)	ND	1.93	0.359	U
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.93	0.421	U
335-67-1	Perfluorooctanoic Acid (PFOA)	ND	1.93	0.444	U
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.93	0.187	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.93	0.502	U
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.93	0.421	U
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	ND	1.93	0.540	U
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.93	0.598	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.93	0.281	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.93	0.242	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.93	0.409	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.93	0.372	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.93	0.537	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.93	0.360	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.93	0.571	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.93	0.303	U

new 2/16/18



Form 1

SemiVolatile Organics

10

Client	: ERM, Inc.	Lab Number	: L1843787
Project Name	: SANMINA GW	Project Number	: 0482594
Lab ID	: L1843787-10	Date Collected	: 10/24/18 18:10
Client ID	: SAN-MW-8 (10242018)	Date Received	: 10/25/18
Sample Location	: OWEGO, NY	Date Analyzed	: 11/12/18 18:12
Sample Matrix	: WATER	Date Extracted	: 11/01/18
Analytical Method	: 122,537(M)	Dilution Factor	: 1
Lab File ID	: I0234	Analyst	: PB
Sample Amount	: 259 ml	Instrument ID	: LCMS02
Extraction Method	: EPA 537	GC Column	: Acquity UPLC BEH C18
Extract Volume	: 1000 uL	%Solids	: N/A
GPC Cleanup	: N	Injection Volume	: 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.93	0.954	U

rev 12/1/18



Form 1

SemiVolatile Organics

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-11
 Client ID : SAN-MW-34 (10252018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I0235
 Sample Amount : 260 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/25/18 08:41
 Date Received : 10/25/18
 Date Analyzed : 11/12/18 18:29
 Date Extracted : 11/01/18
 Dilution Factor : 1
 Analyst : PB
 Instrument ID : LCMS02
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	3.45	1.92	0.359	
2706-90-3	Perfluoropentanoic Acid (PFPeA)	9.46	1.92	0.446	
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	ND	1.92	0.365	U
307-24-4	Perfluorohexanoic Acid (PFHxA)	6.63	1.92	0.473	
375-85-9	Perfluoroheptanoic Acid (PFHpA)	3.55	1.92	0.358	
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.92	0.419	U
335-67-1	Perfluorooctanoic Acid (PFOA)	3.37	1.92	0.442	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.92	0.186	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.92	0.500	U
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.92	0.419	U
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	ND	1.92	0.538	U
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.92	0.596	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.92	0.280	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.92	0.241	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.92	0.408	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.92	0.371	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.92	0.535	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.92	0.358	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.92	0.569	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.92	0.302	U



11

Form 1 SemiVolatile Organics

Client : ERM, Inc. Project Name : SANMINA GW Lab ID : L1843787-11 Client ID : SAN-MW-34 (10252018) Sample Location : OWEGO, NY Sample Matrix : WATER Analytical Method : 122,537(M) Lab File ID : I0235 Sample Amount : 260 ml Extraction Method : EPA 537 Extract Volume : 1000 uL GPC Cleanup : N	Lab Number : L1843787 Project Number : 0482594 Date Collected : 10/25/18 08:41 Date Received : 10/25/18 Date Analyzed : 11/12/18 18:29 Date Extracted : 11/01/18 Dilution Factor : 1 Analyst : PB Instrument ID : LCMS02 GC Column : Acquity UPLC BEH C18 %Solids : N/A Injection Volume : 3 uL
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CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.92	0.950	U

Form 1

SemiVolatile Organics

12

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-12
 Client ID : SAN-MW-36 (10252018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I0236
 Sample Amount : 256 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/25/18 10:48
 Date Received : 10/25/18
 Date Analyzed : 11/12/18 18:45
 Date Extracted : 11/01/18
 Dilution Factor : 1
 Analyst : PB
 Instrument ID : LCMS02
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	1.37	1.95	0.364	J
2706-90-3	Perfluoropentanoic Acid (PFPeA)	ND	1.95	0.453	U
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	ND	1.95	0.371	U
307-24-4	Perfluorohexanoic Acid (PFHxA)	ND	1.95	0.480	U
375-85-9	Perfluoroheptanoic Acid (PFHpA)	ND	1.95	0.363	U
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.95	0.426	U
335-67-1	Perfluorooctanoic Acid (PFOA)	1.87	1.95	0.449	J
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.95	0.189	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.95	0.508	U
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.95	0.426	U
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	6.08	1.95	0.547	
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.95	0.605	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.95	0.284	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.95	0.244	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.95	0.414	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.95	0.377	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.95	0.543	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.95	0.364	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.95	0.578	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.95	0.307	U

new 12/11/18



Form 1

SemiVolatile Organics

12

Client	: ERM, Inc.	Lab Number	: L1843787
Project Name	: SANMINA GW	Project Number	: 0482594
Lab ID	: L1843787-12	Date Collected	: 10/25/18 10:48
Client ID	: SAN-MW-36 (10252018)	Date Received	: 10/25/18
Sample Location	: OWEGO, NY	Date Analyzed	: 11/12/18 18:45
Sample Matrix	: WATER	Date Extracted	: 11/01/18
Analytical Method	: 122,537(M)	Dilution Factor	: 1
Lab File ID	: I0236	Analyst	: PB
Sample Amount	: 256 ml	Instrument ID	: LCMS02
Extraction Method	: EPA 537	GC Column	: Acquity UPLC BEH C18
Extract Volume	: 1000 uL	%Solids	: N/A
GPC Cleanup	: N	Injection Volume	: 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.95	0.965	U

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Client : ERM, Inc.
Project Name : SANMINA GW
Lab ID : L1843787-13
Client ID : SAN-MW-14 (10252018)
Sample Location : OWEGO, NY
Sample Matrix : WATER
Analytical Method : 122,537(M)
Lab File ID : I0237
Sample Amount : 252 ml
Extraction Method : EPA 537
Extract Volume : 1000 uL
GPC Cleanup : N

Lab Number : L1843787
Project Number : 0482594
Date Collected : 10/25/18 11:07
Date Received : 10/25/18
Date Analyzed : 11/12/18 19:02
Date Extracted : 11/01/18
Dilution Factor : 1
Analyst : PB
Instrument ID : LCMS02
GC Column : Acquity UPLC BEH C18
%Solids : N/A
Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	1.81	1.98	0.370	J
2706-90-3	Perfluoropentanoic Acid (PFPeA)	1.45 J	1.98	0.460	J
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	1.11	1.98	0.377	J
307-24-4	Perfluorohexanoic Acid (PFHxA)	1.63	1.98	0.488	J
375-85-9	Perfluoroheptanoic Acid (PFHpA)	1.76	1.98	0.369	J
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	1.05	1.98	0.432	J
335-67-1	Perfluorooctanoic Acid (PFOA)	5.01	1.98	0.456	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.98	0.192	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.98	0.516	U
375-95-1	Perfluorononanoic Acid (PFNA)	2.28	1.98	0.432	
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	32.5	1.98	0.556	
335-76-2	Perfluorodecanoic Acid (PFDA)	0.726	1.98	0.615	J
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.98	0.288	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.98	0.248	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.98	0.421	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.98	0.383	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.98	0.552	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.98	0.370	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.98	0.587	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.98	0.312	U



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Form 1 SemiVolatile Organics

Client : ERM, Inc. Project Name : SANMINA GW Lab ID : L1843787-13 Client ID : SAN-MW-14 (10252018) Sample Location : OWEGO, NY Sample Matrix : WATER Analytical Method : 122,537(M) Lab File ID : I0237 Sample Amount : 252 ml Extraction Method : EPA 537 Extract Volume : 1000 uL GPC Cleanup : N	Lab Number : L1843787 Project Number : 0482594 Date Collected : 10/25/18 11:07 Date Received : 10/25/18 Date Analyzed : 11/12/18 19:02 Date Extracted : 11/01/18 Dilution Factor : 1 Analyst : PB Instrument ID : LCMS02 GC Column : Acquity UPLC BEH C18 %Solids : N/A Injection Volume : 3 uL
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CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.98	0.980	U

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Form 1 SemiVolatile Organics

14

Client : ERM, Inc.
Project Name : SANMINA GW
Lab ID : L1843787-14
Client ID : SAN-MW-27 (10252018)
Sample Location : OWEGO, NY
Sample Matrix : WATER
Analytical Method : 122,537(M)
Lab File ID : 10240
Sample Amount : 266 ml
Extraction Method : EPA 537
Extract Volume : 1000 uL
GPC Cleanup : N

Lab Number : L1843787
Project Number : 0482594
Date Collected : 10/25/18 15:05
Date Received : 10/25/18
Date Analyzed : 11/12/18 19:51
Date Extracted : 11/01/18
Dilution Factor : 1
Analyst : PB
Instrument ID : LCMS02
GC Column : Acquity UPLC BEH C18
%Solids : N/A
Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	1.34	1.88	0.351	J
2706-90-3	Perfluoropentanoic Acid (PFPeA)	1.20 J	1.88	0.436	J
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	1.83	1.88	0.357	J
307-24-4	Perfluorohexanoic Acid (PFHxA)	1.10	1.88	0.462	J
375-85-9	Perfluoroheptanoic Acid (PFHpA)	1.12	1.88	0.350	J
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.88	0.410	U
335-67-1	Perfluorooctanoic Acid (PFOA)	3.11	1.88	0.432	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.88	0.182	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.88	0.489	U
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.88	0.410	U
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	3.73	1.88	0.526	
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.88	0.583	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.88	0.273	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.88	0.235	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.88	0.398	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.88	0.363	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.88	0.522	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.88	0.350	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.88	0.556	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.88	0.295	U

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Form 1
SemiVolatile Organics

Client : ERM, Inc. Project Name : SANMINA GW Lab ID : L1843787-14 Client ID : SAN-MW-27 (10252018) Sample Location : OWEGO, NY Sample Matrix : WATER Analytical Method : 122,537(M) Lab File ID : I0240 Sample Amount : 266 ml Extraction Method : EPA 537 Extract Volume : 1000 uL GPC Cleanup : N	Lab Number : L1843787 Project Number : 0482594 Date Collected : 10/25/18 15:05 Date Received : 10/25/18 Date Analyzed : 11/12/18 19:51 Date Extracted : 11/01/18 Dilution Factor : 1 Analyst : PB Instrument ID : LCMS02 GC Column : Acquity UPLC BEH C18 %Solids : N/A Injection Volume : 3 uL
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CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.88	0.928	U

Form 1

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15

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-15
 Client ID : SAN-MW-6 (10252018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : 10241
 Sample Amount : 255 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/25/18 15:33
 Date Received : 10/25/18
 Date Analyzed : 11/12/18 20:08
 Date Extracted : 11/01/18
 Dilution Factor : 1
 Analyst : PB
 Instrument ID : LCMS02
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	2.05	1.96	0.366	
2706-90-3	Perfluoropentanoic Acid (PFPeA)	1.89 J	1.96	0.455	J
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	1.73	1.96	0.372	J
307-24-4	Perfluorohexanoic Acid (PFHxA)	1.70	1.96	0.482	J
375-85-9	Perfluoroheptanoic Acid (PFHpA)	1.16	1.96	0.365	J
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.96	0.427	U
335-67-1	Perfluorooctanoic Acid (PFOA)	3.25	1.96	0.451	
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.96	0.190	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.96	0.510	U
375-95-1	Perfluorononanoic Acid (PFNA)	0.996	1.96	0.427	J
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	6.85	1.96	0.549	
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.96	0.608	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.96	0.285	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.96	0.245	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.96	0.416	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.96	0.378	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.96	0.545	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.96	0.365	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.96	0.580	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.96	0.308	U

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15

Client	: ERM, Inc.	Lab Number	: L1843787
Project Name	: SANMINA GW	Project Number	: 0482594
Lab ID	: L1843787-15	Date Collected	: 10/25/18 15:33
Client ID	: SAN-MW-6 (10252018)	Date Received	: 10/25/18
Sample Location	: OWEGO, NY	Date Analyzed	: 11/12/18 20:08
Sample Matrix	: WATER	Date Extracted	: 11/01/18
Analytical Method	: 122,537(M)	Dilution Factor	: 1
Lab File ID	: I0241	Analyst	: PB
Sample Amount	: 255 ml	Instrument ID	: LCMS02
Extraction Method	: EPA 537	GC Column	: Acquity UPLC BEH C18
Extract Volume	: 1000 uL	%Solids	: N/A
GPC Cleanup	: N	Injection Volume	: 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.96	0.969	U

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16

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-16
 Client ID : SAN-MW-4 (10252018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : 10242
 Sample Amount : 260 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/25/18 16:50
 Date Received : 10/25/18
 Date Analyzed : 11/12/18 20:25
 Date Extracted : 11/01/18
 Dilution Factor : 1
 Analyst : PB
 Instrument ID : LCMS02
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
375-22-4	Perfluorobutanoic Acid (PFBA)	ND	1.92	0.359	U
2706-90-3	Perfluoropentanoic Acid (PFPeA)	ND	1.92	0.446	U
375-73-5	Perfluorobutanesulfonic Acid (PFBS)	ND	1.92	0.365	U
307-24-4	Perfluorohexanoic Acid (PFHxA)	ND	1.92	0.473	U
375-85-9	Perfluoroheptanoic Acid (PFHpA)	ND	1.92	0.358	U
355-46-4	Perfluorohexanesulfonic Acid (PFHxS)	ND	1.92	0.419	U
335-67-1	Perfluorooctanoic Acid (PFOA)	ND	1.92	0.442	U
27619-97-2	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.92	0.186	U
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND	1.92	0.500	U
375-95-1	Perfluorononanoic Acid (PFNA)	ND	1.92	0.419	U
1763-23-1	Perfluorooctanesulfonic Acid (PFOS)	0.996	1.92	0.538	J
335-76-2	Perfluorodecanoic Acid (PFDA)	ND	1.92	0.596	U
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.92	0.280	U
2355-31-9	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.92	0.241	U
2058-94-8	Perfluoroundecanoic Acid (PFUnA)	ND	1.92	0.408	U
335-77-3	Perfluorodecanesulfonic Acid (PFDS)	ND	1.92	0.371	U
754-91-6	Perfluorooctanesulfonamide (FOSA)	ND	1.92	0.535	U
2991-50-6	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.92	0.358	U
307-55-1	Perfluorododecanoic Acid (PFDoA)	ND	1.92	0.569	U
72629-94-8	Perfluorotridecanoic Acid (PFTTrDA)	ND	1.92	0.302	U

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Form 1

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16

Client : ERM, Inc.
 Project Name : SANMINA GW
 Lab ID : L1843787-16
 Client ID : SAN-MW-4 (10252018)
 Sample Location : OWEGO, NY
 Sample Matrix : WATER
 Analytical Method : 122,537(M)
 Lab File ID : I0242
 Sample Amount : 260 ml
 Extraction Method : EPA 537
 Extract Volume : 1000 uL
 GPC Cleanup : N

Lab Number : L1843787
 Project Number : 0482594
 Date Collected : 10/25/18 16:50
 Date Received : 10/25/18
 Date Analyzed : 11/12/18 20:25
 Date Extracted : 11/01/18
 Dilution Factor : 1
 Analyst : PB
 Instrument ID : LCMS02
 GC Column : Acquity UPLC BEH C18
 %Solids : N/A
 Injection Volume : 3 uL

CAS NO.	Parameter	ng/l			Qualifier
		Results	RL	MDL	
376-06-7	Perfluorotetradecanoic Acid (PFTA)	ND	1.92	0.950	U

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