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February 18, 2020

Ms. Nancy Grosso
Principal Technical Consultant
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Re: Emerging Contaminants Groundwater Sampling Summary at Corteva Agriscience (formerly known as DuPont) Driving Park Site (NYSDEC Site # C828142)

Dear Ms. Grosso,

Parsons is pleased to provide this letter report summarizing the analytical results of groundwater sampling activities completed for emerging contaminants at the Corteva Driving Park Avenue Site (NYSDEC ID #C828142) in New York State.

On August 1st, 2019, DuPont (now known as Corteva Agriscience™ (Corteva)) received an email from the New York State Department of Environmental Conservation (NYSDEC) requesting that groundwater sampling be completed at the site for per- and polyfluoroalkyl substances (PFAS) at four (4) existing site monitoring wells (specifically MW-2, MW-3, MW-6, and MW-9). Per follow-up discussions with NYSDEC and Parsons, NYSDEC also required that 1,4-dioxane be sampled.

Groundwater sampling was conducted in accordance with the NYSDEC approved Emerging Contaminant Sampling Work Plan prepared by Parsons (Parsons, 2019), and the United States Environmental Protection Agency (USEPA) Region 1 Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells (USEPA, 2010).

1.0 Site Background

1.1 Site Location and Physical Setting

The Corteva Driving Park site is located at 666 Driving Park Avenue, Rochester, New York (Figure 1), and comprises approximately ten (10) acres. The site was previously used for the production of photographic film and paper beginning in the early 1900s up until 1995, when operations ceased (URS, 2009).

The site is currently vacant and is bound by an 8-foot tall chain link fence. The site is bound to the east and north by a residential neighborhood and to the west by a railroad line. The area to the south of the site and further west of the railroad track is primarily industrial. A site plan is provided as Figure 2.

The site lies at an average elevation of approximately 500 feet above mean sea-level (amsl). The land surface slopes downward to the north, with approximately thirteen (13) feet difference in elevation between the north and south end edges of the site. Overburden materials in the subsurface consist of variable thickness of fill material which overlays glacial till deposits consisting primarily of silt with trace amount of sand. Below the native soil, several feet of weathered bedrock is encountered, followed by moderately to highly fractured bedrock consisting of fossilized and shaley dolostone. Depth to bedrock ranges from approximately five (5) feet in the

southern area of the site to approximately fifteen (15) feet in the northern area of the site, based on previously completed soil borings and bedrock well logs.

Based on previous remedial investigation activities at the site, groundwater was not encountered in the overburden material, but rather, within the bedrock at depths generally ranging between eight (8) to twenty (20) feet below ground surface (bgs), depending on location and season. A summary of historical and recent groundwater level measurements from monitoring wells is provided in Table 1. The predominant flow direction is generally to the north-northeast. On the southern part of the parcel, a groundwater high exists, with the highest groundwater elevations observed in the vicinity of monitoring wells MW-03 and MW-07. This groundwater high may be attributed to storm sewers located beneath Driving Park Avenue. As stated in the 2009 remedial investigation report (RIR), these local storm sewers are constructed in bedrock and may influence groundwater flow at and near the site (AECOM, 2009). Hydraulic conductivity testing (slug tests) completed in 2008 at site wells indicated hydraulic conductivity values of the bedrock aquifer range between 0.09 feet per day (ft/day) to 0.13 ft/day.

Stormwater at the site is conveyed into drainage features such as catch basins, which discharge into the City of Rochester sewer system (URS, 2009). The closest major surface water body is the Genesee River, which is located approximately one (1) mile east of the site.

1.2 Summary of Previous Groundwater Investigations

Previous groundwater investigation activities at the site consisted of the installation and sampling of eight (8) monitoring wells, which were sampled in September 2008 and again in May 2009. The results of sampling indicated the presence of chlorinated solvents (specifically cis-1,2-dichloroethene, trichloroethene, and vinyl chloride, which are attributable to an off-site, up-gradient source) and several metals (iron, magnesium, and sodium), which were detected above the NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.1) (NYSDEC, 1998).

A fluoropolymer slip agent was reportedly utilized in small quantities at the site for a brief period late in the plant's manufacturing history, and therefore, perfluorooctanoic acid (PFOA) was included as a site compound of concern and was also included in the groundwater analyses for the sampling events completed in 2008 and 2009. Analytical results from the sampling events indicated that PFOA was present in site groundwater at detectable concentrations ranging from 40 nanograms per liter (ng/L) to 1,500 ng/L. PFOA was also detected in some soil samples, with detected concentrations in soil ranging from 3.6 micrograms per kilogram (ug/kg) to 540 ug/kg. Some of the detectable concentrations of PFOA were likely removed from the site during remedial hot-spot excavation activities completed in 2012 to remove soils with metals and polychlorinated biphenyls (PCBs) concentrations above the NYSDEC Restricted Residential Soil Cleanup Objectives (SCOs).

2.0 Summary of 2019 Groundwater Investigation Activities

2.1 Site Reconnaissance

On August 8, 2019, a site reconnaissance event was completed to evaluate the current condition of existing site groundwater monitoring wells. The eight (8) existing monitoring wells were found intact but were in need of re-development. Water levels were recorded to an accuracy of one-hundredth of a foot from each well with a PFAS-free electronic water measuring tape.

A letter workplan was submitted to NYSDEC on October 4, 2019, outlining the proposed field activities, including re-development and sampling of four (4) existing site monitoring wells.

2.2 Monitoring Well Re-Development

On October 10 – 11, 2019, the four (4) monitoring wells proposed for sampling (MW-2, MW-3, MW-6, and MW-9) were re-developed using PFAS-free equipment to remove fine sediment. Well re-development was continued until turbidity was less than 50 nephelometric turbidity units (NTU), as measured by a water quality instrument

or until a maximum of 10 well volumes of water had been removed from the well. Well development logs are provided in Attachment A.

2.3 Monitoring Well Sampling

Parsons completed sampling of the four (4) monitoring wells on October 24 and 25, 2019.

Prior to collecting groundwater samples, each monitoring well was gauged with a PFAS-free electronic water measuring tape, and water levels were recorded to an accuracy of one-hundredth of a foot. Water levels were also obtained from wells MW-1, MW-4, MW-5, and MW-7, which were not sampled. Monitoring wells MW-2, MW-3, MW-6, and MW-9 were sampled using low-flow sampling methods. Groundwater sampling was conducted in accordance with the Work Plan and Quality Assurance Project Plan (QAPP) which outlined specific equipment and procedures for collecting groundwater samples for emerging contaminants.

Water quality parameters were recorded every five (5) minutes and immediately prior to sample collection. Water quality parameter measurements and observations recorded during sampling are documented in the groundwater sampling records provided in Attachment B. Groundwater monitoring wells were purged until water quality parameters stabilized within the following thresholds:

- Temperature ± 3% of measurement
- pH ± 0.1 pH units
- Specific conductance ± 3% of measurement
- Redox ±10 mV
- DO ±10% of measurement
- Turbidity* ±10% of measurement

  *For readings of 5 NTU or less, turbidity was considered stable when readings were ±1 NTU.

Laboratory analysis of groundwater samples was conducted by Alpha Analytical, a New York State Department of Health (NYSDOH) Environmental Laboratory Program (ELAP)-approved laboratory certified for analyses using Analytical Services Protocol (ASP). Groundwater samples were submitted for the analysis of:

- PFAS Target Analyte List via Environmental (USEPA) Method 537; and
- 1,4-dioxane via USEPA Method SIM 8270D.

Data validation was performed in accordance with USEPA Region II Standard Operating Procedure for organic and inorganic data review. Validation included the following:

- Verification of 100% of all quality control (QC) sample results (both qualitative and quantitative);
- Verification of the identification of 100% of all sample results (both positive hits and non-detects);
- Re-calculation of 10% of all investigative sample results; and
- Preparation of a Data Usability Summary Report (DUSR) for groundwater samples collected, presented in Attachment C.

2.4 IDW Management

Liquid investigation-derived waste generated from monitoring well development and sampling were containerized in Department of Transportation (DOT) 55-gallon steel drums for off-site disposal.

3.0 Results Summary

3.1 Groundwater Flow

Historic groundwater depth to water and elevation data from 2008 to 2019 are summarized in Table 1, and

potentiometric surface maps for the August 2019 and October 2019 gauging events are presented in Figure 3 and Figure 4, respectively. The predominant groundwater flow direction during both gauging events (August 2019 and October 2019) was to the north-northeast and consistent with previous groundwater gauging events. The average site groundwater hydraulic gradient, as measured between wells MW-1 and MW-7 was 0.013 foot/foot. The localized groundwater mounding situated in the vicinity of MW-7, also consistent with previous monitoring events, was observed during the August 2019 and October 2019 gauging events and is potentially attributable to storm sewers located beneath Driving Park Avenue, as discussed in Section 1.1.

3.2 Analytical Results

Laboratory analytical results for groundwater samples from the 2019 sampling event are summarized in Table 2.

1,4-Dioxane

Analytical results for 1,4-dioxane are compared to the, New York State Drinking Water Council's (NYSDWQC) proposed Maximum Contaminant Level (MCL) of 1.0 µg/L (NYSDWQC, 2018), as well as the USEPA Lifetime Health Advisory Level of 200 micrograms per Liter (µg/L) (USEPA, 2018). The results were below the USEPA Lifetime Health Advisory Level of 200 ug/L and were also below the NYSDWQC's proposed Maximum Contaminant Level (MCL) of 1.0 µg/L.

1,4- dioxane was detected in each of the four (4) wells sampled at concentrations ranging from 0.0896 ug/L in monitoring well MW-02 (duplicate sample) to 0.634 ug/L in monitoring well MW-09. Concentrations of 1,4-dioxane in well MW-02 were similar in value to that of the field and equipment blank samples, and therefore, are likely representative of background concentrations.

Per- and Polyfluoroalkyl Substances (PFAS)

Analytical results for PFAS are compared to the NYSDWQC's proposed MCL of 10 ng/L (NYSDWQC) as well as to the USEPA lifetime health advisory level of 70 nanograms per liter (ng/L) (USEPA, 2018). Such criteria are applicable to concentrations of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), either individually or combined. Thirteen (13) or more PFAS compounds were detected in each of the four (4) monitoring wells sampled;

- PFOA exceeded the NYSDWQC's proposed MCL of 10 ng/L in each of the wells sampled, with concentrations ranging between 125 ng/L (MW-06) to 1,090 ng/L (MW-09);
- PFOS exceeded the NYSDWQC's proposed MCL of 10 ng/L in each of the wells sampled, with concentrations ranging between 60.5 ng/L (MW-06) to 282 ng/L (MW-09); and
- The combined concentrations of PFOA and PFOS in the wells sampled ranged between 186 ng/L (MW-06 to 1,370 ng/L (MW-09), and therefore, each well sampled exceeds the USEPA Lifetime Health Advisory Level of 70 ng/L.
- Concentrations of other PFAS compounds detected at concentrations of 100 ng/L or greater included:
    - N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA), which was detected at concentrations ranging between 155 ng/L (MW-09) and 337 ng/L (MW-02 duplicate sample);
    - Perfluoroheptanoic acid (PFHpA), which was detected at a concentration of 116 ng/L in well MW-09; and
    - Perfluorohexanoic acid (PFHxA), which was detected at a concentration of 105 ng/L in well MW-09.

A historic comparison of PFOA groundwater results for the site from the 2008, 2009, and 2019 sampling events is provided in Table 3 and Figure 5. Concentrations of PFOA from the October 2019 sampling event are generally similar to concentrations observed from 2008 and 2009 in each well but are slightly lower in concentration. Note

that PFOS was not sampled during previous sampling events.

Data Usability Summary

Based on the DUSR prepared (Attachment C), the reported 1,4-dioxane analytical results as well as the PFAS results were considered usable. The laboratory analytical precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) requirements were also met.

4.0 Conclusions

1,4- dioxane was detected in each of the monitoring well samples, but was detected at concentrations below both the NYSDWQC's proposed MCL of 1.0 µg/L and the USEPA Lifetime Health Advisory Level of 200 ug/L.

Thirteen (13) or more PFAS compounds were detected in each of the four (4) monitoring wells sampled. Of these compounds, both the combined and individual concentrations of PFOA and PFOS were detected at concentrations exceeding the NYSDWQC proposed MCL of 10 ng/L and the USEPA Lifetime Health Advisory Level of 70 ng/L. Concentrations of PFOA in the October 2019 sampling event are generally consistent in value with previous sampling events in the four (4) wells sampled.

Use of any water for drinking purposes other than the City's potable water supply is prohibited in the City of Rochester.

Please feel free to contact me at (315) 552-9717 or email me at james.mikochik@parsons.com should you have any questions or comments on the above groundwater sampling summary.

Sincerely,

PARSONS

James Mikochik
Senior Geologist

cc: Heather Philip, Ed Ashton; Parsons

References

NYSDOH, 2018. *Drinking Water Quality Council Recommends Nation's Most Protective Maximum Contaminant Levels for Three Unregulated Contaminants in Drinking Water*. Retrieved from https://www.health.ny.gov/press/releases/2018/2018-1218_drinking_water_quality_council_recommendations.htm on August 6, 2019.

City of Rochester, NY, 2019. City of Rochester, NY Code, Part II General Ordinances, Chapter 59, Article III, 59-27 – Water Supply. Retrieved from https://ecode360.com/8676501 on January 31, 2020.

Parsons, 2010. DuPont Driving Park Facility – Addendum to Remedial Investigation Report. April 2010.

Parsons, 2019. Work Plan for Sampling of Emergent Contaminants at DuPont Rochester Driving Park Site (NYSDEC Site #C828142). October 2019.

URS, 2009. DuPont Driving Park Facility – Remedial Investigation Report. February 2009.

USEPA, 2010. Region 1 Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of

Groundwater Samples from Monitoring Wells. January 2010.

USEPA, 2018. 2018 Edition of Drinking Water Standards and Health Advisories. March 2018.

TABLES

Table 1
Groundwater Elevation Data Summary (2008 - 2019) Table
Corteva Driving Park Site
Rochester, NY

Monitoring Well ID	Elevation (TOC)[1,2,3]	9/10/2008		9/16/2008		10/16/2008		10/30/2008		11/14/2008		12/16/2008	
		Depth to Water[4]	Groundwater Elevation[3]	Depth to Water[4]	Groundwater Elevation[3]	Depth to Water[4]	Groundwater Elevation[3]	Depth to Water[4]	Groundwater Elevation[3]	Depth to Water[4]	Groundwater Elevation[3]	Depth to Water[4]	Groundwater Elevation[3]
MW-01	494.01	NM	NM	13.78	480.23	13.96	480.05	12.71	481.30	17.47	476.54	12.03	481.98
MW-02	503.32	19.00	484.32	18.40	484.92	18.91	484.41	13.84	489.48	20.76	482.56	12.75	490.57
MW-03	508.49	21.22	487.27	21.66	486.83	21.97	486.52	19.56	488.93	20.85	487.64	18.61	489.88
MW-04	508.38	21.87	486.51	20.82	487.56	22.08	486.30	19.62	488.76	12.51	495.87	18.68	489.70
MW-05	494.5	13.18	481.32	20.35	474.15	13.46	481.04	11.04	483.46	19.68	474.82	11.55	482.95
MW-06	507.85	20.88	486.97	20.77	487.08	20.99	486.86	18.55	489.30	19.09	488.76	17.65	490.20
MW-07	507.57	20.88	486.69	20.62	486.95	20.65	486.92	17.63	489.94	16.76	490.81	15.06	492.51
MW-09	504.41	17.95	486.46	17.72	486.69	18.16	486.25	14.19	490.22	13.54	490.87	12.59	491.82

Monitoring Well ID	Elevation (TOC)[1,2,3]	5/19/2009		8/8/2019		10/24/2019	
		Depth to Water[4]	Groundwater Elevation[3]	Depth to Water[4]	Groundwater Elevation[3]	Depth to Water[4]	Groundwater Elevation[3]
MW-01	494.01	12.77	481.24	13.76	480.25	12.69	481.32
MW-02	503.32	15.58	487.74	16.69	486.63	14.65	488.67
MW-03	508.49	18.02	490.47	21.02	487.47	19.23	489.26
MW-04	508.38	19.81	488.57	21.11	487.27	19.32	489.06
MW-05	494.5	11.87	482.63	13.06	481.44	11.44	483.06
MW-06	507.85	18.70	489.15	19.75	488.10	17.98	489.87
MW-07	507.57	11.49	496.08	11.18	496.39	10.10	497.47
MW-09	504.41	14.51	489.90	15.36	489.05	14.65	489.76

1. Obtained from survey data dated 9/15/2008.
2. TOC: Top of casing
3. Elevation relative to mean sea level.
4. Depth in feet below top (TOC)

NM = not measured

Table 2
Groundwater Analytical Data Summary Table
October 2019 Sampling Event
Corteva Driving Park Site
Rochester, New York

							Duplicate of MW-02								
			Location ID	USEPA Lifetime Health Advisory Level[1]	NYSDWC Proposed Maximum Contaminant Level[2]	MW-02	MW-02	MW-03	MW-06	MW-09	EQUIPMENT BLANK	EQUIPMENT BLANK	FIELD BLANK	FIELD BLANK
			Field Sample ID			GW1019-MW-02	GW1019-MW-02-D	GW1019-MW-03	GW1019-MW-06	GW1019-MW-09	GW1019-EB-01	GW1019-EB-02	GW1019-FB-01	GW1019-FB-02
			Date Sampled			10/24/2019	10/24/2019	10/24/2019	10/24/2019	10/25/2019	10/24/2019	10/25/2019	10/24/2019	10/25/2019
			Lab Sample ID			L1950670-03	L1950670-04	L1950670-06	L1950670-02	L1950670-08	L1950670-01	L1950670-07	L1950670-05	L1950670-09
			Sample Delivery Group (SDG)			L1950670	L1950670	L1950670	L1950670	L1950670	L1950670	L1950670	L1950670	L1950670
			Sample Purpose			FS	DUP	FS	FS	FS	EB	EB	FB	FB
Parameter Name	Analytical Method	Filtered	Report Units											
1,4-Dioxane	8270D SIM	N	UG/L	200	1	**0.0934 J**	**0.0896 J**	**0.502**	**0.259**	**0.634**	**0.0822 J**	**0.0869 J**	**0.0846 J**	**0.096 J**
Perfluorobutane Sulfonic Acid (PFBS)	537 Modified	N	NG/L	--	--	**9.94**	**9.14**	**7.27**	**6.58**	**35.3**	<1.71	<1.84	<1.9	<1.98
Perfluorobutanoic Acid (PFBA)	537 Modified	N	NG/L	--	--	**22.8**	**23.2**	**16.9**	**16.7**	**46.1**	<1.71	<1.84	<1.9	<1.98
Perfluorodecanoic Acid (PFDA)	537 Modified	N	NG/L	--	--	**0.403 J**	**0.487 J**	**2.97**	**0.435 J**	**0.409 J**	<1.71	<1.84	<1.9	<1.98
Perfluorododecanoic Acid (PFDoA)	537 Modified	N	NG/L	--	--	<1.8	<1.79	<1.83	<1.8	<1.86	<1.71	<1.84	<1.9	<1.98
Perfluoroheptanoic Acid (PFHpA)	537 Modified	N	NG/L	--	--	**30.5**	**30.7**	**41.7**	**17.8**	**116**	<1.71	<1.84	<1.9	<1.98
Perfluorohexane Sulfonic Acid (PFHxS)	537 Modified	N	NG/L	--	--	**14.6**	**13.6**	**19.9**	**10.9**	**40.1**	<1.71	<1.84	<1.9	<1.98
Perfluorohexanoic Acid (PFHxA)	537 Modified	N	NG/L	--	--	**37.4**	**38.2**	**39.7**	**18.1**	**105**	**0.338 J**	<1.84	**0.319 J**	<1.98
Perfluorononanoic Acid (PFNA)	537 Modified	N	NG/L	--	--	**2.09**	**2.26**	**8.77**	**3.06**	**4.72**	**0.392 J**	<1.84	**1.66 J**	<1.98
Perfluoropentanoic Acid (PFPeA)	537 Modified	N	NG/L	--	--	**25.9**	**26.6**	**37.5**	**12.2**	**47.9**	<1.71	<1.84	<1.9	<1.98
Perfluoroundecanoic Acid (PFUnA)	537 Modified	N	NG/L	--	--	<1.8	<1.79	<1.83	<1.8	<1.86	**0.338 J**	**0.69 J**	**4.03**	<1.98
Perfluorooctanoic Acid (PFOA)	537 Modified	N	NG/L	--	10	**197**	**197**	**229**	**125**	**1090**	<1.71	<1.84	<1.9	<1.98
Perfluorooctanesulfonic Acid (PFOS)	537 Modified	N	NG/L	--	10	**146**	**139**	**150**	**60.5**	**282**	**0.703 J**	<1.84	<1.9	<1.98
Perfluorodecane Sulfonic Acid (PFDS)	537 Modified	N	NG/L	--	--	<1.8	<1.79	<1.83	<1.8	<1.86	<1.71	<1.84	<1.9	<1.98
Perfluorotetradecanoic Acid (PFTA)	537 Modified	N	NG/L	--	--	<1.8	<1.79	<1.83	<1.8	<1.86	<1.71	<1.84	<1.9	<1.98
Perfluorotridecanoic Acid (PFTrDA)	537 Modified	N	NG/L	--	--	<1.8	<1.79	<1.83	<1.8	<1.86	<1.71	**0.362 J**	**1.18 J**	<1.98
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	537 Modified	N	NG/L	--	--	<1.8	<1.79	<1.83	<1.8	<1.86	<1.71	<1.84	<1.9	<1.98
6:2 Fluorotelomer sulfonate (6:2 FTS)	537 Modified	N	NG/L	--	--	<1.8	<1.79	<1.83	<1.8	<1.86	<1.71	<1.84	<1.9	<1.98
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	537 Modified	N	NG/L	--	--	**302**	**337**	**185**	**156**	**155**	<1.71	<1.84	<1.9	<1.98
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	537 Modified	N	NG/L	--	--	<1.8 U	**0.613 J**	**0.941 J**	<1.8	<1.86	<1.71	<1.84	<1.9	<1.98
Perfluoroheptane sulfonic acid (PFHpS)	537 Modified	N	NG/L	--	--	**2.87**	**2.28**	**4.01**	**1.06 J**	**6.02**	<1.71	<1.84	<1.9	<1.98
Perfluorooctane Sulfonamide (FOSA)	537 Modified	N	NG/L	--	--	**41.8**	**39.0**	**97.2**	**14.5**	**14.6**	<1.71	<1.84	<1.9	<1.98
Total PFOA and PFOS	537 Modified	N	NG/L	70	--	**343**	**336**	**379**	**186**	**1370**	**0.703 J**	<1.84	<1.9	<1.98

Notes:
ug/L = micrograms per liter
ng/L = nanograms per liter
"--" = Not specified
NA = Not analyzed for indicated compound.
Qualifiers: J = Estimated value, "<" = Not Detected at the Detection Limit shown
FS = field sample
DUP = field duplicate
EB = equipment blank
FB = field blank
NYSDWC = New York State Drinking Water Quality Council
USEPA = United State Environmental Proection Agency
[1]USEPA, 2018. 2018 Edition of Drinking Water Standards and Health Advisories. March, 2018. https://www.epa.gov/sites/production/files/2018-03/documents/dwtable2018.pdf
[2] https://www.health.ny.gov/press/releases/2018/2018-12-18_drinking_water_quality_council_recommendations.htm
Blue Highlighting = Exceeds USEPA Lifetime Health Advisory.
Gray Highlighting = Compound is greater than NYSDWQC Proposed MCL.

Table 3
Historic PFOA/PFOS Data Comparison Table (2008 - 2019)
Corteva Driving Park Site
Rochester, New York

	USEPA Lifetime Health Advisory Level[1]	NYSDWC Proposed Maximum Contaminant Level[2]	Well ID: Matrix: Sampled:	MW-01 Water 9/16/2008	MW-01 Water 5/21/2009	MW-02 Water 9/16/2008	MW-02 Water 5/19/2009	MW-02 Water 10/24/2019	MW-02 (DUP) Water 10/24/2019
COMPOUND			UNITS:						
Perfluorooctanoic Acid (PFOA)	--	10	ng/l	64	40	280	240	197	197
Perfluorooctanesulfonic Acid (PFOS)	--	10	ng/l	NA	NA	NA	NA	146	139
PFOA + PFOS	70	--	ng/l	64	40	280	240	343	336

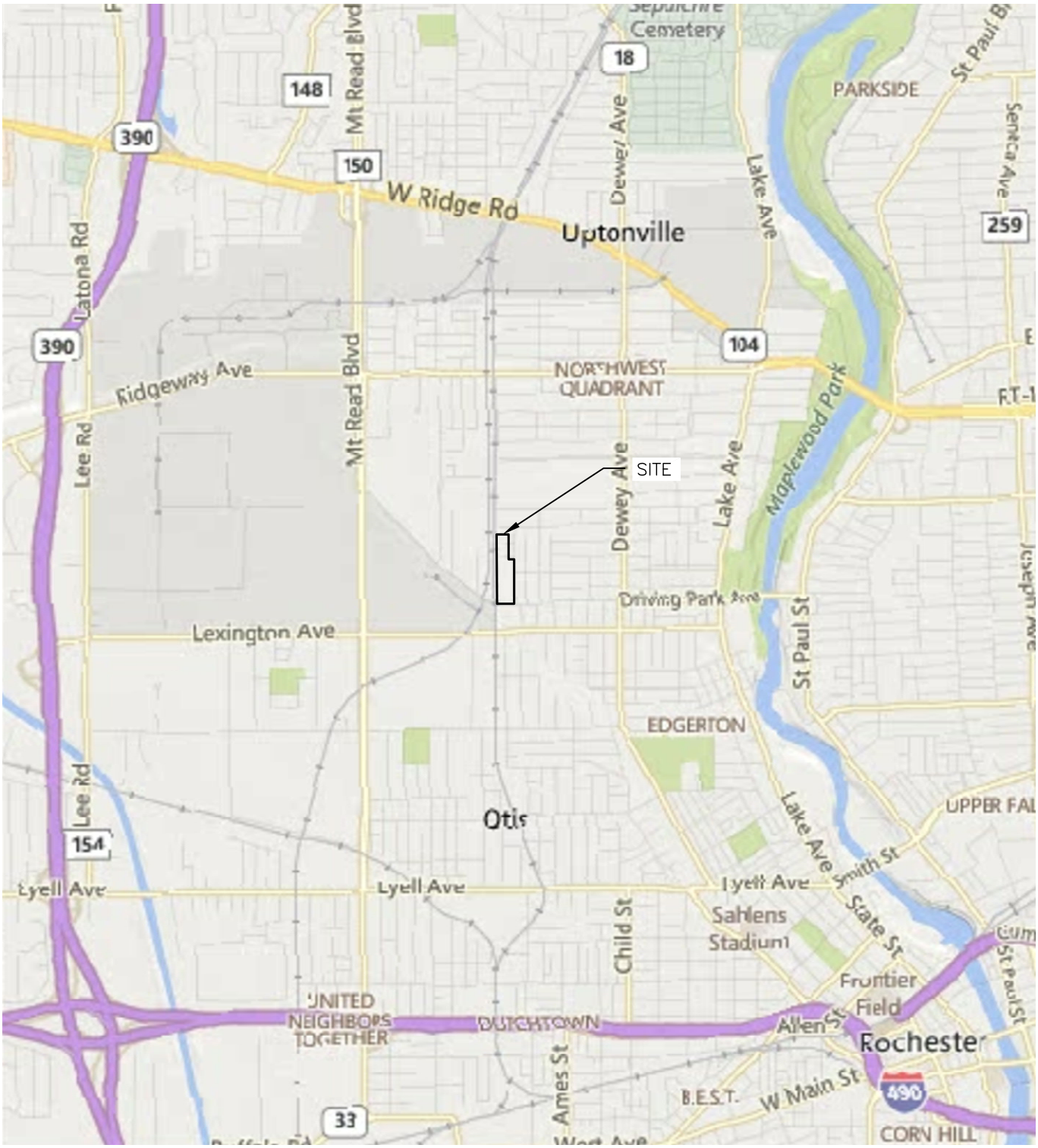
	USEPA Lifetime Health Advisory Level[1]	NYSDWC Proposed Maximum Contaminant Level[2]	Well ID: Matrix: Sampled:	MW-03 Water 9/16/2008	MW-03 Water 5/19/2009	MW-03 Water 10/24/2019	MW-04 Water 9/15/2008	MW-04 Water 5/20/2009	MW-04 (DUP) Water 5/20/2009
COMPOUND			UNITS:						
Perfluorooctanoic Acid (PFOA)	--	10	ng/l	340	280	229	10	12	12
Perfluorooctanesulfonic Acid (PFOS)	--	10	ng/l	NA	NA	150	NA	NA	NA
PFOA + PFOS	70	--	ng/l	340	280	379	10	12	12

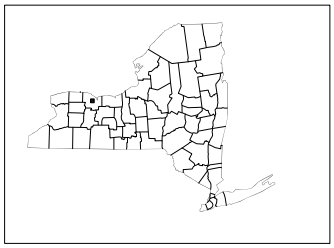
	USEPA Lifetime Health Advisory Level[1]	NYSDWC Proposed Maximum Contaminant Level[2]	Well ID: Matrix: Sampled:	MW-05 Water 9/17/2008	MW-05 Water 5/19/2009	MW-06 Water 9/18/2008	MW-06 Water 5/20/2009	MW-06 Water 10/24/2019
COMPOUND			UNITS:					
Perfluorooctanoic Acid (PFOA)	--	10	ng/l	< 0.9	< 10	170	170	125
Perfluorooctanesulfonic Acid (PFOS)	--	10	ng/l	NA	NA	NA	NA	60.5
PFOA + PFOS	70	--	ng/l	< 0.9	< 10	170	170	186

	USEPA Lifetime Health Advisory Level[1]	NYSDWC Proposed Maximum Contaminant Level[2]	Well ID: Matrix: Sampled:	MW-07 Water 9/16/2008	MW-07 Water 5/19/2009	MW-09 Water 9/15/2008	MW-09 (DUP) Water 9/15/2008	MW-09 Water 5/20/2009	MW-09 Water 10/25/2019
COMPOUND			UNITS:						
Perfluorooctanoic Acid (PFOA)	--	10	ng/l	51	71	400 J	430	1500	1090
Perfluorooctanesulfonic Acid (PFOS)	--	10	ng/l	NA	NA	NA	NA	NA	282
PFOA + PFOS	70	--	ng/l	51	71	400 J	430	1500	1370

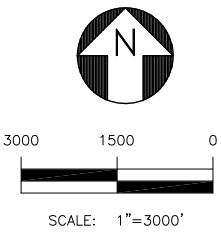
Notes:
ng/L = nanograms per liter
"--" = Not specified
NYSDWC = New York State Drinking Water Quality Council
USEPA = United State Environmental Proection Agency
[1]USEPA, 2018. 2018 Edition of Drinking Water Standards and Health Advisories. March, 2018 https://www.epa.gov/sites/production/files/2018-
[2] https://www.health.ny.gov/press/releases/2018/2018-12-18_drinking_water_quality_council_recommendations.htm
Blue Highlighting = Exceeds USEPA Lifetime Health Advisory.
Gray Highlighting = Compound is greater than NYSDWQC Proposed MCL.
NA = Not analyzed for indicated compound.
Qualifiers: J = Estimated value, "<" = Not Detected at the Detection Limit shown

FIGURES





NEW YORK STATE



SCALE: 1"=3000'

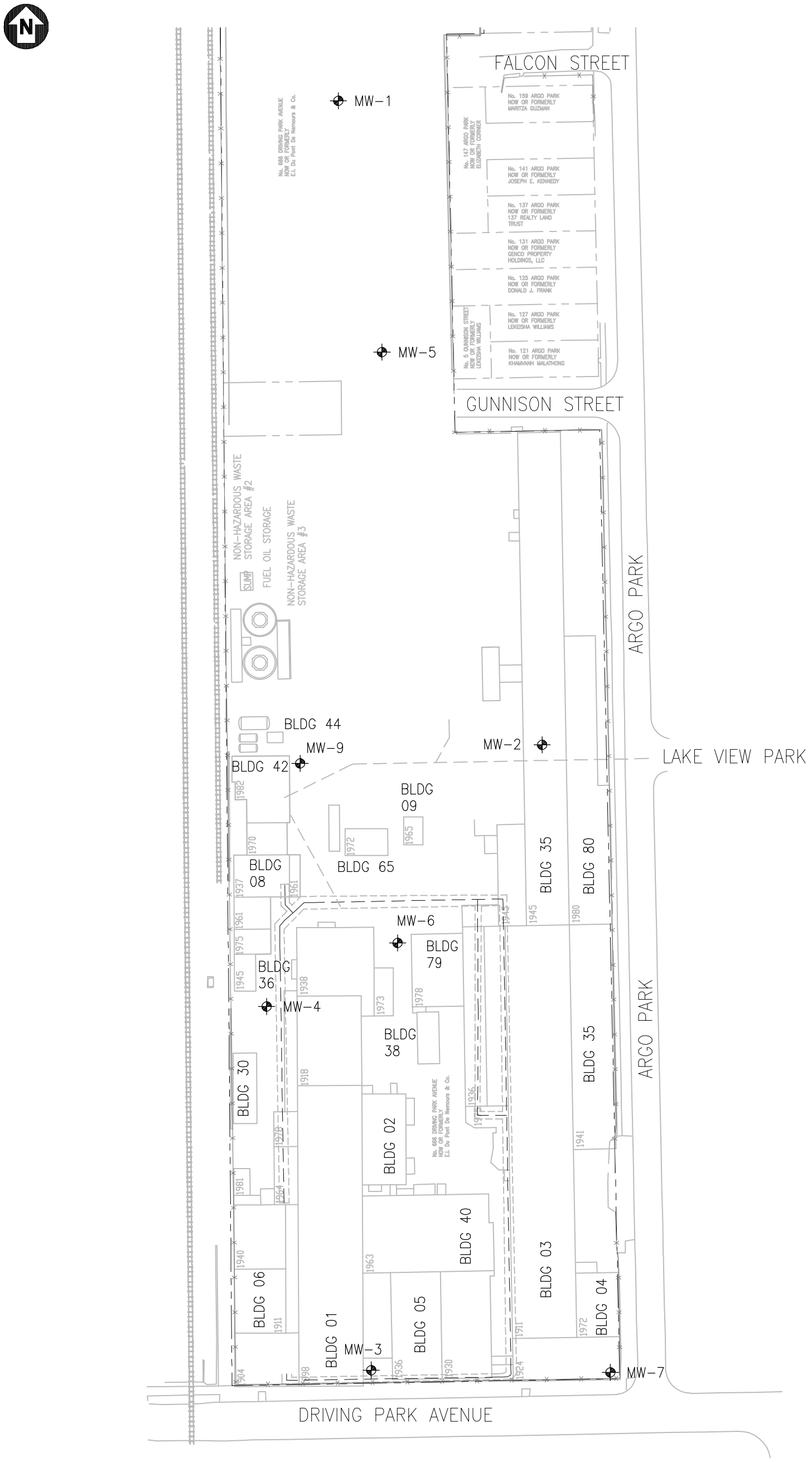
FIGURE 1

CORTEVA
666 DRIVING PARK SITE
ROCHESTER, NEW YORK

SITE LOCATION MAP

PARSONS
301 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\DUPONT PROGRAM\ROCHESTER DRIVING PARK\CAD\CORTEVA\FIGURE\451928-SLM-001.DWG
PLOT DATE: 1/15/2020 2:41 PM PLOTTED BY: RUSSO, JILL



MONITORING WELL LOCATION

SITE BOUNDARY

100 50 0 100 200

SCALE: 1"=100'

FIGURE 2

CORTEVA
666 DRIVING PARK SITE
ROCHESTER, NEW YORK

SITE PLAN

PARSONS
301 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\DUPONT PROGRAM\ROCHESTER DRIVING PARK\CAD\CORTEVA\FIGURE\451928-SK001.DWG
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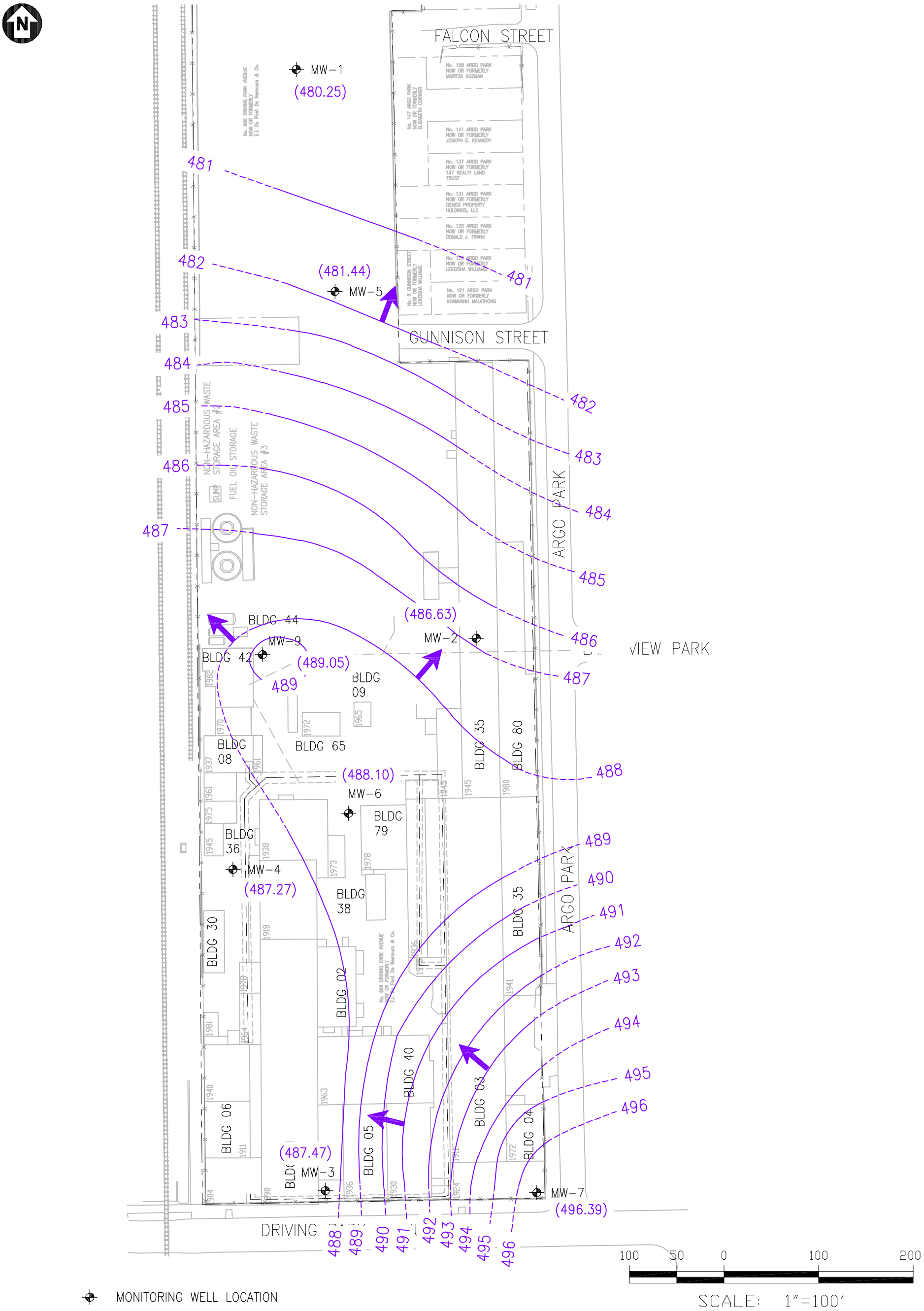

MONITORING WELL LOCATION

SITE BOUNDARY

GROUNDWATER ELEVATION CONTOUR (AMSL)

INFERRED GROUNDWATER ELEVATION CONTOUR (AMSL)

(487.47) GROUNDWATER ELEVATION (FT AMSL)

APPARENT GROUNDWATER FLOW DIRECTION

SCALE: 1"=100'

FIGURE 3

CORTEVA
666 DRIVING PARK SITE
ROCHESTER, NEW YORK

POTENTIOMETRIC SURFACE MAP
AUGUST 8, 2019

PARSONS
301 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\DUPONT PROGRAM\ROCHESTER DRIVING PARK\CAD\CORTEVA\FIGURE\451928-SK002.DWG
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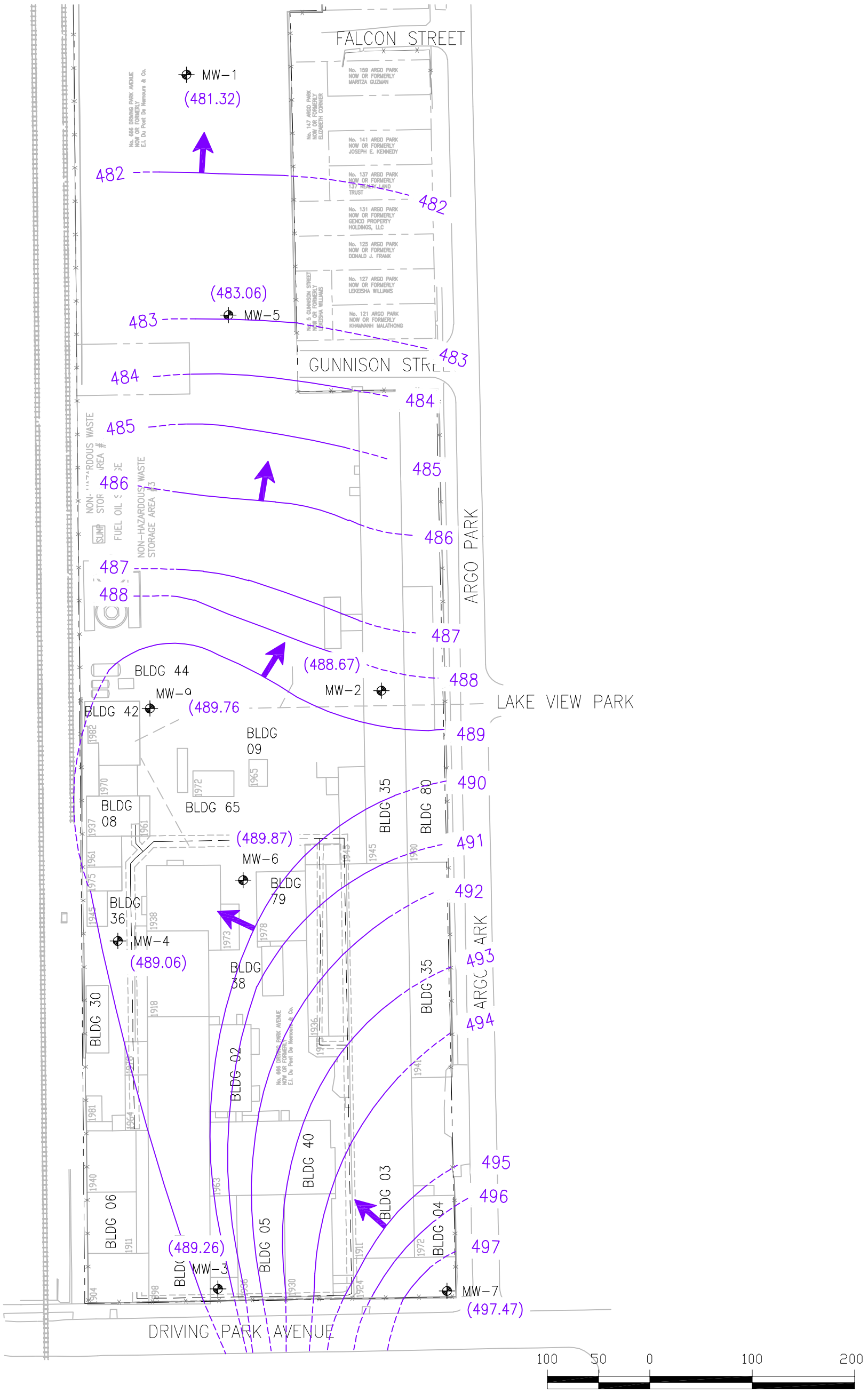


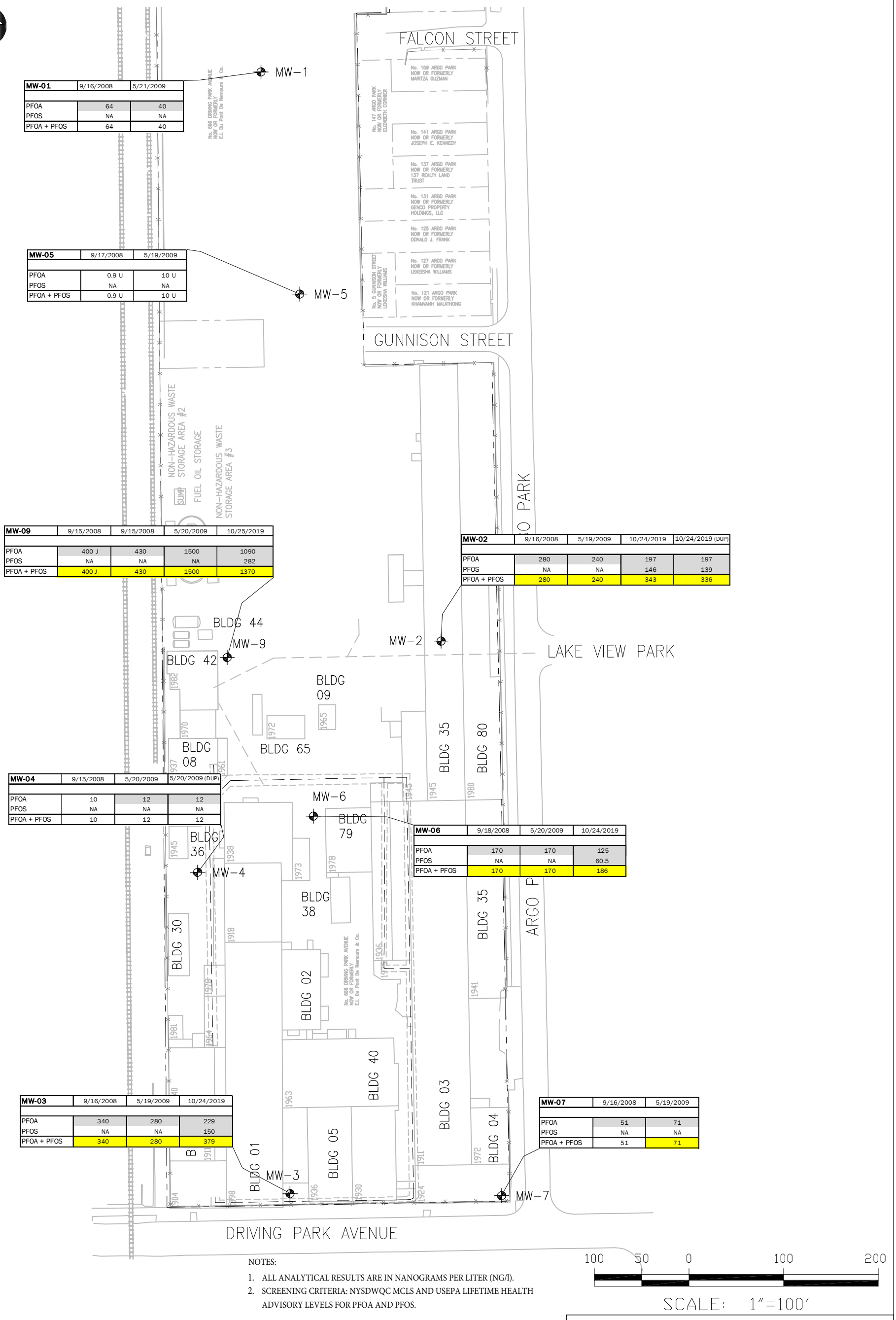
FIGURE 4

CORTEVA
666 DRIVING PARK SITE
ROCHESTER, NEW YORK

POTENTIOMETRIC SURFACE MAP
OCTOBER 24, 2019

PARSONS
301 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\DUPONT PROGRAM\ROCHESTER DRIVING PARK\CAD\CORTEVA\FIGURE\451928-SK003.DWG
PLOT DATE: 2/3/2020 1:48 PM PLOTTED BY: RUSSO, JILL



MW-01	9/16/2008	5/21/2009
PFOA	64	40
PFOS	NA	NA
PFOA + PFOS	64	40

MW-05	9/17/2008	5/19/2009
PFOA	0.9 U	10 U
PFOS	NA	NA
PFOA + PFOS	0.9 U	10 U

MW-09	9/15/2008	9/15/2008	5/20/2009	10/25/2019
PFOA	400 J	430	1500	1090
PFOS	NA	NA	NA	282
PFOA + PFOS	400 J	430	1500	1370

MW-02	9/16/2008	5/19/2009	10/24/2019	10/24/2019 (DUP)
PFOA	280	240	197	197
PFOS	NA	NA	146	139
PFOA + PFOS	280	240	343	336

MW-04	9/15/2008	5/20/2009	5/20/2009 (DUP)
PFOA	10	12	12
PFOS	NA	NA	NA
PFOA + PFOS	10	12	12

MW-06	9/18/2008	5/20/2009	10/24/2019
PFOA	170	170	125
PFOS	NA	NA	60.5
PFOA + PFOS	170	170	186

MW-03	9/16/2008	5/19/2009	10/24/2019
PFOA	340	280	229
PFOS	NA	NA	150
PFOA + PFOS	340	280	379

MW-07	9/16/2008	5/19/2009
PFOA	51	71
PFOS	NA	NA
PFOA + PFOS	51	71

100 50 0 100 200

SCALE: 1"=100'

MONITORING WELL LOCATION

SITE BOUNDARY

NOTES:

1. ALL ANALYTICAL RESULTS ARE IN NANOGRAMS PER LITER (NG/l).
2. SCREENING CRITERIA: NYSDWQC MCLS AND USEPA LIFETIME HEALTH ADVISORY LEVELS FOR PFOA AND PFOS.

NYSDWQC = NEW YORK STATE DRINKING WATER QUALITY COUNCIL
USEPA = UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
PFOA = PERFLUOROOCTANOIC ACID
PFOS = PERFLOUROSULFONIC ACID
DUP = DUPLICATE SAMPLE
NA = NOT ANALYZED FOR INDICATED COMPOUND
ND = COMPOUND NOT DETECTED
J = ESTIMATED VALUE
MCL = MAXIMUM CONTAMINANT LEVEL

RESULT EXCEEDS USEPA LIFETIME HEALTH ADVISORY LEVEL (70 NG/L)

RESULT IS GREATER THAN PROPOSED NYSDWQC MCL (10 NG/L)

FIGURE 5

CORTEVA
666 DRIVING PARK SITE
ROCHESTER, NEW YORK

GROUNDWATER SAMPLE RESULTS 2008 – 2019

PARSONS
301 PLAINFIELD ROAD * SUITE 350 * SYRACUSE, NY 13212 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\DUPONT PROGRAM\ROCHESTER DRIVING PARK\CAD\CORTEVA\FIGURE\451928-SK004.DWG
PLOT DATE: 1/20/2020 1:24 PM PLOTTED BY: RUSSO, JILL

ATTACHMENT A

Monitoring Well Development Records

Monitoring Well Development Log

Date	10/10/19	Personnel	Henry Frentzel	Weather	sunny, 45°
Site Name	Driving Park	Evacuation Method	waterra	Well #	MW-2
Site Location	Rochester	Sampling Method	N/A	Project #	451928.02021

Well information:

Depth of Well	17.9	ft.		
Depth to Water	15.25	ft.		
H_{wc}	2.65	ft.		
Depth to Intake	--	ft.		

*Measurements taken from:

x	Top of Well Casing
	Top of Protective Casing
	(Other, Specify)

One Well Volume: N/A

3 Volumes

2-Inch Casing:		Ft. of Water x 0.16 =		Gal
3-Inch Casing:		Ft. of Water x 0.36 =		Gal
4-Inch Casing:		Ft. of Water x 0.65 =		Gal

Start Purge Time: 0900

		10%	0.1	3%	10 mV	10%	10%	100 - 500 mL/min
~~Elapsed Time~~ (min)	Depth to Water (ft)	Temperature (celsius)	pH	Conductivity (ms/cm)	Oxidation Reduction Potential	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Flow Rate (mL/min)
900	16.4	14.76	5.99	0.898	29	6.51	467	200
905	16.8	14.41	6.2	0.866	-17	7.69	445	500
910	16.7	13.92	6.34	0.947	-35	7.07	226	500
915	16.7	13.92	6.27	0.76	-38	8.38	58.2	500
920	16.5	13.51	6.55	0.986	-47	8.26	41.3	400
925	16.3	13.55	6.24	0.653	11	8.33	78.6	400
930	16.3	13.35	6.38	0.735	-17	8.27	73	400
935	16.4	13.33	6.44	0.908	-11	8.1	52.5	400
940	16.4	13.36	6.57	0.798	-44	8.48	43.4	400
945	16.5	13.53	6.55	0.68	-35	8.28	48.9	400
950	16.3	13.71	6.92	1.13	-57	7.66	12.8	400
955	16.3	13.84	6.59	0.673	-19	8.57	42.6	350
1000	16.3	13.98	6.8	0.775	-15	8.22	33.1	350
1005	16.4	14.09	7.05	1.11	-59	6.47	9.5	350
1015	16.4	14.57	7.1	1.1	-60	9.05	3.8	350
1025	16.4	14.97	7.23	1.07	-54	8.99	3.4	350
1035	16.6	14.98	7.26	1.04	-58	6.55	0.2	350

End Purge Time: 1035

Comments: Continued purging on 10/11/2019. Total well depth measured on 10/10/2019 was likely obstructed by rock socket. Correct depth was measured on 10/11/2019.

Observations:

Total volume of purged water removed: 18 (gallons)

Physical appearance at start:		Physical appearance at start:	
Color	Yellow	Color	clear
Odor	Faint, unknown	Odor	faint naphthalene
Sheen/Free Product	None	Sheen/Free Product	None

Monitoring Well Development Log

Date	10/11/19	Personnel	Henry Frentzel	Weather	42° sunny
Site Name	Driving Park	Evacuation Method	waterra	Well #	MW-2
Site Location	Rochester	Sampling Method	N/A	Project #	451928.02021

Well information:

Depth of Well	26.9	ft.	*Measurements taken from:	
Depth to Water	16.2	ft.	x	Top of Well Casing
H_{wc}	10.7	ft.		Top of Protective Casing
Depth to Intake	--	ft.		(Other, Specify)

One Well Volume:

					3 Volumes
2-Inch Casing:		Ft. of Water x 0.16 =		Gal	
3-Inch Casing:		Ft. of Water x 0.36 =		Gal	
4-Inch Casing:	10.7	Ft. of Water x 0.65 =	~6.96	Gal	~20.87

Start Purge Time: 0855

		10%	0.1	3%	10 mV	10%	10%	100 - 500 mL/min
~~Elapsed Time~~ (min)	Depth to Water (ft)	Temperature (celsius)	pH	Conductivity (ms/cm)	Oxidation Reduction Potential	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Flow Rate (mL/min)
855	16.6	TOO SLUDGY TO MEASURE						500
910	17	12.9	7.78	1.07	-31	4.73	248	500
925	16.9	13.09	7.72	1.11	-25	3.95	113	500
940	17	13.24	7.78	1.08	-21	4.15	101	500
955	17	13.42	7.78	1.02	-1	6.85	62.4	500
1010	17	13.5	7.6	1.09	-32	2.15	46.2	500
1025	17	13.71	7.47	1.08	-28	0.78	54.2	500
1040	17	13.86	7.57	1.11	-28	3.54	95.2	500

End Purge Time: 1040 Comments:

Observations:

18 gal. purged yesterday

Total volume of purged water removed: 70 (gallons)

Physical appearance at start:	Physical appearance at start:
Color yellow-brown	Color clear
Odor none	Odor none
Sheen/Free Product none	Sheen/Free Product none

Monitoring Well Development Log

Date	10/11/19	Personnel	Henry Frentzel	Weather	42°, sunny
Site Name	Driving Park	Evacuation Method	waterra	Well #	MW-3
Site Location	Rochester	Sampling Method	N/A	Project #	451928.02021

Well information:

Depth of Well	26.8	ft.	*Measurements taken from:	
Depth to Water	20.4	ft.	x	Top of Well Casing
H_{wc}	6.4	ft.		Top of Protective Casing
Depth to Intake	--	ft.		(Other, Specify)

One Well Volume:

					3 Volumes
2-Inch Casing:		Ft. of Water x 0.16 =		Gal	
3-Inch Casing:		Ft. of Water x 0.36 =		Gal	
4-Inch Casing:	6.4	Ft. of Water x 0.65 =	~4.16	Gal	~12.5

Start Purge Time: 0830

		10%	0.1	3%	10 mV	10%	10%	100 - 500 mL/min
~~Elapsed Time~~ (min)	Depth to Water (ft)	Temperature (celsius)	pH	Conductivity (ms/cm)	Oxidation Reduction Potential	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Flow Rate (mL/min)
830	21.1	13.05	7.34	2.29	-144	1.53	783	500
900	26	13.21	7.46	2.64	39	4.33	808	500
915	26.1	13.41	7.32	2.61	17	7.43	212	500
930	25.9	13.74	7.29	2.58	-5	5.73	179	500
945	25.5	13.85	7.24	2.62	-8	5.93	151	500
1000	25.8	14.04	7.22	2.59	10	5.47	90.5	500
1020	26	14.2	7.26	2.57	10	6.42	171	500
1035	26	14.58	7.22	2.61	-8	5.57	349	500
1100	26.8	14.83	7.33	2.4	51	6.63	191	500
1130	26	18.12	7.66	2.58	27	5.27	210	500
1145	25.9	18.22	7.79	2.56	43	6.56	136	500
1200	25.2	18.64	7.8	2.48	53	6.42	133	500
1215	25	18.29	7.69	2.55	46	6.99	157	500
1230	25	18.34	7.77	2.62	43	5.16	320	500

End Purge Time: 1230 Comments:

Observations:

Total volume of purged water removed: 50 (gallons)

Physical appearance at start:	Physical appearance at start:
Color yellow-brown	Color slightly cloudy
Odor faint, unidentified	Odor faint, unidentified
Sheen/Free Product none	Sheen/Free Product none

Monitoring Well Development Log

Date	10/10/19	Personnel	Henry Frentzel	Weather	sunny 61
Site Name	Driving Park	Evacuation Method	waterra	Well #	MW-6
Site Location	Rochester	Sampling Method	N/A	Project #	451928.02021

Well information:

Depth of Well	27.3	ft.	*Measurements taken from:	
Depth to Water	18.8	ft.	x	Top of Well Casing
H_{wc}	8.5	ft.		Top of Protective Casing
Depth to Intake	--	ft.		(Other, Specify)

One Well Volume:

					3 Volumes
2-Inch Casing:		Ft. of Water x 0.16 =		Gal	
3-Inch Casing:		Ft. of Water x 0.36 =		Gal	
4-Inch Casing:	8.5	Ft. of Water x 0.65 =	~5.5	Gal	~16

Start Purge Time: 1315

		10%	0.1	3%	10 mV	10%	10%	100 - 500 mL/min
~~Elapsed Time~~ (min)	Depth to Water (ft)	Temperature (celsius)	pH	Conductivity (ms/cm)	Oxidation Reduction Potential	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Flow Rate (mL/min)
1515	19.3	16.78	7.51	1.27	64	3.89	505	500
1525	20.8	15.63	7.51	1.16	50	4.73	977	500
1535	21	15.08	7.32	1.16	42	1.04	1000	500
1545	21.3	14.71	7.26	1.11	44	4.22	1000	500
1555	21.3	14.54	7.25	1.11	53	4.29	512	500
1605	21.2	14.35	7.23	1.11	69	4.17	243	500
1615	21.2	14.32	7.22	1.13	67	4.26	205	500
1625	21.1	14.13	7.17	1.13	45	2.59	175	500
1635	21.1	14.32	7.17	1.13	41	4.5	181	500
1645	21	14.31	7.24	1.13	48	4.5	176	500
1655	21	14.1	7.34	1.14	34	3.42	276	500
1705	20.9	14.39	7.36	1.14	43	4.41	231	500
1715	21.6	14.18	7.38	1.12	42	5.36	225	500
1725	21.6	14.41	7.12	1.13	6	5.89	189	500

End Purge Time: 1725 Comments:

Observations:

Total volume of purged water removed: 55 (gallons)

Physical appearance at start:		Physical appearance at start:	
Color	yellow-brown	Color	cloudy white
Odor	faint naphthalene	Odor	none
Sheen/Free Product	none	Sheen/Free Product	none

Monitoring Well Development Log

Date	10/10/19	Personnel	Henry Frentzel	Weather	sunny, 56°
Site Name	Driving Park	Evacuation Method	waterra	Well #	MW-09
Site Location	Rochester	Sampling Method	N/A	Project #	451928.02021

Well information:

Depth of Well	22.3 ft.	*Measurements taken from:	
Depth to Water	14.8 ft.	x	Top of Well Casing
H_{wc}	7.5 ft.		Top of Protective Casing
Depth to Intake	-- ft.		(Other, Specify)

One Well Volume:					3 Volumes
2-Inch Casing:		Ft. of Water x 0.16 =		Gal	
3-Inch Casing:		Ft. of Water x 0.36 =		Gal	
4-Inch Casing:	7.5	Ft. of Water x 0.65 =	~4.87	Gal	~14.6

Start Purge Time: 1105

		10%	0.1	3%	10 mV	10%	10%	100 - 500 mL/min
~~Elapsed Time~~ (min)	Depth to Water (ft)	Temperature (celsius)	pH	Conductivity (ms/cm)	Oxidation Reduction Potential	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Flow Rate (mL/min)
1105	16	16.61	7.6	1.15	71	5.72	-	500 mL/min
1115	16.6	16.33	7.55	1.27	83	2.81	467	500
1125	16.5	16.62	7.51	1.31	88	3.93	172	400
1135	16.6	17.25	7.44	1.32	87	4.01	66.1	400
1140	16.5	16.98	7.39	1.31	90	4.52	52.6	400
1145	16.5	16.93	7.25	1.33	102	3.52	52	400
1155	16.5	17.36	7.3	1.35	82	8.24	44.5	400
1210	16.4	17.97	7.49	1.34	101	4.11	44.8	400
1220	16.5	17.71	7.5	1.33	100	3.7	42.3	400
1230	16.4	17.78	7.51	1.34	87	4.5	37.2	400
1240	16.4	17.97	7.52	1.33	99	5.08	43.3	400
1245	16.4	17.43	7.43	1.35	102	3.91	48.6	400
1250	16.4	17.36	7.33	1.37	89	1.92	41	400
1305	16.4	17.93	7.29	1.34	104	1.63	37	400
1315	16.4	18.14	7.29	1.35	90	6.38	36.7	400
1325	16.5	18.25	7.4	1.35	100	3.66	34.6	400
1335	16.6	17.45	7.41	1.35	79	2.78	31.6	400
1350	16.7	17.62	7.52	1.35	75	6.99	29.1	400
1410	16.9	17.31	7.46	1.37	96	6.4	25.8	400
1425	16.9	16.59	7.4	1.38	102	5.26	30	400
1435	16.9	15.96	7.24	1.37	116	6.68	27.6	400

End Purge Time: 1435 Comments:

Observations:

Total volume of purged water removed: 50 (gallons)

Physical appearance at start:		Physical appearance at start:	
Color	red-brown	Color	clear
Odor	faint naphthalene	Odor	faint naphthalene
Sheen/Free Product	none	Sheen/Free Product	none

ATTACHMENT B

Groundwater Sampling Records

Low Flow Ground Water Sampling Log

Date	10/24/19	Personnel	JM/FM	Weather	cloudy, High 50's, windy
Site Name	DuPont - Rochester Driving Park	Evacuation Method	Peristaltic Pump	Well #	MW-02
Site Location	Rochester, NY	Sampling Method	Low Flow	Project #	451928.02021

Well information:

Depth of Well	27.1 ft.	*Measurements taken from:		
Depth to Water	14.65 ft.		x	Top of Well Casing
H_{wc}	12.45 ft.			Top of Protective Casing
Depth to Intake	~22 ft.	PID = 0.0 ppm (well head)		(Other, Specify)

Start Purge Time: 1450

		10%	0.1	3%	10 mV	10%	10%	100 - 500 mL/min
Elapsed Time (min)	**Depth to Water (ft)**	**Temperature (celsius)**	**pH**	**Conductivity (ms/cm)**	**Oxidation Reduction Potential**	**Dissolved Oxygen (mg/L)**	**Turbidity (NTU)**	**Flow Rate (mL/min)**
5	14.95	14.19	7.33	1.00	-60	10.30	23.50	250
10	14.83	14.22	7.31	1.00	-65	7.87	19.90	250
15	14.84	14.23	7.30	1.00	-66	7.03	16.50	250
20	14.84	14.27	7.30	1.00	-67	6.64	17.40	250
25	14.82	14.15	7.31	1.00	-67	0.00	15.60	250
30	14.82	14.14	7.30	1.00	-67	0.00	12.90	250
35	14.82	14.09	7.30	1.00	-64	0.00	11.80	250
40	14.82	14.01	7.30	1.00	-63	0.00	9.49	250
45	14.82	13.94	7.29	1.01	-61	0.00	8.78	250
50	14.82	13.90	7.29	1.01	-61	0.00	8.47	250

End Purge Time: 1540

Water Sample

Time Collected: 1545

Total volume of purged water removed: ~3.5 (gallons)

Physical appearance at start:	
Color	clear
Odor	none
Sheen/Free Product	none

Physical appearance at start:	
Color	clear
Odor	none
Sheen/Free Product	none

Samples:

GW1019-MW-02	Standard Sample
GW1019-MW02D	Duplicate sample
GW1019-MW02MS	Matrix spike
GW1019-MW02MSD	Matrix spike duplicate
GW1019-FB-01	Field Blank

Comments:

Sample	Container Type	# Collected	Field Filtered	Preservative	Container pH
PFAS - EPA 537	Plastic250mL	10	no	Trizma	N/A
8270D-SIM	Amber 250mL	10	no	None	N/A

Low Flow Ground Water Sampling Log

Date	10/24/19	Personnel	FM/JM	Weather	cloudy, high 50's, windy
Site Name	DuPont - Rochester Driving Park	Evacuation Method	Peristaltic Pump	Well #	MW-03
Site Location	Rochester, NY	Sampling Method	Low Flow	Project #	451928.02021

Well information:

Depth of Well	27.5 ft.	*Measurements taken from:		
Depth to Water	19.23 ft.		x	Top of Well Casing
H_{wc}	8.27 ft.			Top of Protective Casing
Depth to Intake	~23.35 ft.	PID = 0.0 ppm (well head)		(Other, Specify)

Start Purge Time: 1626

		10%	0.1	3%	10 mV	10%	10%	100 - 500 mL/min
Elapsed Time (min)	**Depth to Water (ft)**	**Temperature (celsius)**	**pH**	**Conductivity (ms/cm)**	**Oxidation Reduction Potential**	**Dissolved Oxygen (mg/L)**	**Turbidity (NTU)**	**Flow Rate (mL/min)**
0	19.30	14.3	6.43	0.005	171	9.44	10.72	250
5	19.36	14.18	7.72	2.83	55	0.49	7.80	250
10	19.37	13.83	7.37	2.84	45	0.00	6.50	250
15	19.37	13.89	7.37	2.78	51	0.00	7.34	250
20	19.37	13.91	7.39	2.69	59	0.00	9.16	250
25	19.37	13.93	7.42	2.57	65	0.90	14.30	250
30	19.37	14.02	7.47	2.48	76	2.73	16.80	250
35	19.37	13.99	7.49	2.39	82	7.26	16.50	250
40	19.37	13.99	7.48	2.33	86	6.49	9.21	250
45	19.37	13.99	7.47	2.32	88	4.60	7.17	250
50	19.37	13.99	7.46	2.31	88	4.27	4.64	250
55	19.37	13.99	7.45	2.31	89	3.98	3.35	250
60	19.37	13.99	7.44	2.31	88	3.67	2.55	250

End Purge Time: 1726

Water Sample

Time Collected: 1730

Total volume of purged water removed: ~4 (gallons)

Physical appearance at start:

Color clear

Odor none

Sheen/Free Product none

Physical appearance at start:

Color clear

Odor none

Sheen/Free Product none

Samples:

GW1019-MW-03 Standard Sample

Comments: Older HDPE tubing present in well, could not retrieve initially, removed after sampling.

Sample	Container Type	# Collected	Field Filtered	Preservative	Container pH
PFAS - EPA 537	Plastic 250mL	2	no	Trizma	N/A
8270D-SIM	Amber 250mL	2	no	None	N/A

Low Flow Ground Water Sampling Log

Date	10/24/19	Personnel	JM/FM	Weather	60°, cloudy
Site Name	DuPont - Rochester Driving Park	Evacuation Method	Peristaltic Pump	Well #	MW-06
Site Location	Rochester, NY	Sampling Method	Low Flow	Project #	451928.02021

Well information:

Depth of Well	27.72 ft.	*Measurements taken from:		
Depth to Water	17.98 ft.		x	Top of Well Casing
H_{wc}	9.74 ft.			Top of Protective Casing
Depth to Intake	~22.85 ft.	PID = 0.0 ppm (well head)		(Other, Specify)

Start Purge Time: 1245

		10%	0.1	3%	10 mV	10%	10%	100 - 500 mL/min
Elapsed Time (min)	**Depth to Water (ft)**	**Temperature (celsius)**	**pH**	**Conductivity (ms/cm)**	**Oxidation Reduction Potential**	**Dissolved Oxygen (mg/L)**	**Turbidity (NTU)**	**Flow Rate (mL/min)**
10	18.22	14.4	7.25	1.33	210	1.16	105	200
15	18.22	14.49	7.31	1.31	203	1.17	101.9	200
20	18.26	14.45	7.31	1.3	166	1.07	78.1	200
25	18.27	14.46	7.3	1.28	116	0.68	79.9	200
30	18.29	14.48	7.3	1.27	65	0.48	59.9	200
35	18.31	14.46	7.29	1.26	23	0.35	50.7	200
40	18.32	14.44	7.28	1.25	4	0.03	41.8	200
45	18.33	14.42	7.27	1.24	-3	0	36.7	200
50	18.51	14.44	7.28	1.24	-3	0	37.2	200
55	18.35	14.43	7.27	1.24	-8	0	24.2	200
60	18.36	14.44	7.27	1.23	-11	0	26.9	200
65	18.36	14.47	7.27	1.23	-12	0	22.3	200
70	18.36	14.48	7.28	1.23	-13	0	17.4	200
75	18.39	14.48	7.27	1.23	-15	0	19.2	200
80	18.39	14.47	7.27	1.23	-16	0	14.6	200
85	18.39	14.5	7.27	1.23	-17	0	15.7	200
90	18.39	14.48	7.28	1.22	-17	0	14.3	200

End Purge Time: 1415

Water Sample

Time Collected: 1420

Total volume of purged water removed: ~5.75 (gallons)

Physical appearance at start:
Color cloudy
Odor none
Sheen/Free Product none

Physical appearance at start:
Color clear
Odor none
Sheen/Free Product none

Samples:

GW1019-MW-06 Standard Sample
GW1019-EB-01 Equipment Blank (@1320)

Comments:

Sample	Container Type	# Collected	Field Filtered	Preservative	Container pH
PFAS - EPA 537	Plastic 250mL	4	no	Trizma	N/A
8270D-SIM	Amber 250mL	4	no	none	N/A

Low Flow Ground Water Sampling Log

Date	10/25/19	Personnel	JM	Weather	50's, cloudy, wind 5mph
Site Name	DuPont - Rochester Driving Park	Evacuation Method	Peristaltic Pump	Well #	MW-09
Site Location	Rochester, NY	Sampling Method	Low Flow	Project #	451928.02021

Well information:

Depth of Well	23.19 ft.	*Measurements taken from:		
Depth to Water	14.76 ft.		x	Top of Well Casing
H_{wc}	8.43 ft.			Top of Protective Casing
Depth to Intake	~19 ft.	PID = 0.0 ppm (well head)		(Other, Specify)

Start Purge Time: 0915

		10%	0.1	3%	10 mV	10%	10%	100 - 500 mL/min
Elapsed Time (min)	**Depth to Water (ft)**	**Temperature (celsius)**	**pH**	**Conductivity (ms/cm)**	**Oxidation Reduction Potential**	**Dissolved Oxygen (mg/L)**	**Turbidity (NTU)**	**Flow Rate (mL/min)**
5	14.85	10.14	7.27	1.31	190	1.46	19.9	150
10	14.86	11.23	7.6	1.29	168	0.49	9.51	125
15	14.87	11.71	7.65	1.29	143	0.79	5.46	150
20	14.82	11.99	7.62	1.3	123	0.92	4.82	150
25	14.89	12.18	7.57	1.31	107	0.97	5.24	150
30	14.89	12.28	7.53	1.29	77	0.43	4.27	150
35	14.4	12.37	7.3	1.27	57	0.38	3.07	150
40	14.9	12.6	7.45	1.28	44	0.33	3.29	150
45	14.9	12.7	7.44	1.28	32	0.28	3.79	150
50	14.9	12.71	7.43	1.28	25	0.24	2.57	150
55	14.9	12.61	7.41	1.28	18	0.2	2.68	150
60	14.9	12.59	7.4	1.29	15	0.15	3.01	150
65	14.91	12.79	7.39	1.28	12	0.14	2.49	150
70	14.91	12.93	7.39	1.27	10	0.13	3.33	150

End Purge Time: 1025

Water Sample

Time Collected: 1030

Total volume of purged water removed: ~3 (gallons)

Physical appearance at start:		Physical appearance at start:	
Color	clear w/ trace rust/sediment	Color	clear
Odor	none	Odor	none
Sheen/Free Product	none	Sheen/Free Product	none

Samples: Normal

GW1019-MW-09 Standard Sample

GW1019_EB-02 Equipment Blank

(collected @ 0825, prior to setting up equipment)

GW1019_FB-01 Field Blank @ 1030

Comments: upon arriving at well, lock was present, but not secured.

Sample	Container Type	# Collected	Field Filtered	Preservative	Container pH
PFAS - EPA 537	Plastic 250mL	6	no	Trizma	N/A
8270D-SIM	Amber 250mL	6	no	none	N/A

ATTACHMENT C

Data Usability Summary Report

DATA USABILITY SUMMARY REPORT

OCTOBER 2019 GROUNDWATER SAMPLING FOR EMERGING CONTAMINANTS

ROCHESTER DRIVING PARK AVENUE SITE

NYSDEC SITE # C828142

Prepared For:

Corteva Agriscience™

Chestnut Run Plaza 735 / 1115-1974 Centre Road

Wilmington, DE 19805

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JANUARY 2020

TABLE OF CONTENTS

Page

LIST OF ATTACHMENTS

SECTION 1.0 DATA USABILITY SUMMARY

Groundwater samples were collected from the Corteva Driving Park Avenue site on October 24, 2019 and October 25, 2019. Analytical results from these samples were validated and reviewed by Parsons for usability with respect to the following requirements:

- Project Work Plan,
- USEPA analytical methodologies, and
- USEPA Region II Standard Operating Procedures (SOPs) for organic and inorganic data review.

The analytical laboratory for this project was Alpha Analytical. This laboratory is certified to perform project analyses through the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP).

1.1 LABORATORY DATA PACKAGES

The laboratory data package turnaround time, defined as the time from sample receipt by the laboratory to receipt of the analytical data packages by Parsons, was 24 days for the project samples. The data packages received from Alpha Analytical were paginated, complete, and overall were of good quality. Comments on specific quality control (QC) and other requirements are discussed in detail in the attached data validation report which is summarized in Section 2.

1.2 SAMPLING AND CHAIN-OF-CUSTODY

The samples were collected, properly preserved, shipped under a chain-of-custody (COC) record, and received at Alpha Analytical within one day of sampling. All samples were received intact and in good condition at the laboratory.

1.3 LABORATORY ANALYTICAL METHODS

Groundwater samples that were collected from the site were analyzed for 1,4-dioxane and per- and poly-fluorinated alkyl substances (PFAS). Summaries of issues concerning these laboratory analyses are presented in Subsections 1.3.1 through 1.3.2. The data qualifications resulting from the data validation review and statements on the laboratory analytical precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) are discussed in Section 2. The laboratory data were reviewed and may be qualified with the following validation flags:

"U" - not detected at the value given,
"UJ" - estimated and not detected at the value given,
"J" - estimated at the value given,
"J+" - estimated biased high at the value given,
"J-" - estimated biased low at the value given,
"N" - presumptive evidence at the value given, and
"R" - unusable value.

The validated laboratory data were tabulated and are presented in Attachment A.

1.3.1 1,4-DIOXANE ORGANIC ANALYSIS

The project samples were analyzed for 1,4-dioxane using the USEPA SW-846 8270D SIM analytical method. The reported results for these samples did not require qualification resulting from data validation. The reported 1,4-dioxane analytical results were considered 100% complete (i.e., usable) for the project data presented by Alpha Analytical. PARCCS requirements were met.

1.3.2 PFAS ORGANIC ANALYSIS

The project samples were analyzed for PFAS using the modified USEPA 537.1 analytical method. Certain reported results for these samples were qualified as not detected based upon blank contamination. The reported PFAS analytical results were considered 100% complete (i.e., usable) for the project data presented by Alpha Analytical. PARCCS requirements were met.

SECTION 2.0 DATA VALIDATION REPORT

2.1 GROUNDWATER

Data review has been completed for data packages generated by Alpha Analytical containing groundwater samples collected from the site. Analytical results from these samples were contained within sample delivery group (SDG) L1950670. All of these samples were properly preserved, shipped under a COC record, and received intact by the analytical laboratory. The validated laboratory data are presented in Attachment A.

Data validation was performed for all samples in accordance with the most current editions of the USEPA Region II SOPs for organic and inorganic data review. This data validation and usability report is presented by analysis type.

2.1.1 1,4-DIOXANE

The following items were reviewed for compliancy in the 1,4-dioxane analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Laboratory control sample (LCS) recoveries
- Laboratory method blank and field/equipment contamination
- GC/MS instrument performance
- Initial and continuing calibrations
- Internal standard area counts and retention times
- Field duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of blank contamination as discussed below.

Blank Contamination

The QC field blanks and the QC equipment blanks associated with the samples contained 1,4-dioxane below the reporting limit at concentrations ranging 0.0822-0.096 µg/L. Validation qualification of the project samples was not required.

Usability

All 1,4-dioxane sample results were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The 1,4-dioxane data presented by Alpha Analytical were 100% complete (i.e., usable). The validated 1,4-dioxane laboratory data are tabulated and presented in Attachment A.

2.1.2 PFAS

The following items were reviewed for compliancy in the PFAS analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Laboratory control sample (LCS) recoveries
- Laboratory method blank and equipment/field blank contamination
- Instrument performance
- Initial and continuing calibrations
- Internal standard responses
- Field duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of MS/MSD precision and accuracy, blank contamination, and continuing calibrations as discussed below.

MS/MSD Precision and Accuracy

All MS/MSD precision (relative percent difference; RPD) and accuracy (percent recovery; %R) measurements were considered acceptable and within QC limits for designated spiked project samples with the exception of the high MS/MSD accuracy results for 8:2-FTS (178%R/177%R; QC limit 56-173%R) and the high MS accuracy result for NEtFOSAA (236%R; QC limit 45-170%R) during the spiked analyses of sample GW1019-MW-02. Validation qualification of the parent sample was not required.

Blank Contamination

The QC field blank associated with samples collected on 10/24/19 contained PFHxA, PFNA, PFUnA, and PFTrDA at concentrations of 0.319, 1.66, 4.03, and 1.18 ng/L, respectively; the QC equipment blank associated with samples collected on 10/24/19 contained PFHxA, PFNA, PFOS, and PFUnA below the reporting limit at concentrations of 0.338, 0.392, 0.703, and 0.338 ng/L, respectively; and the QC equipment blank associated with samples collected on 10/25/19 contained PFUnA and PFTrDA below the reporting limit at concentrations of 0.69 and 0.362 ng/L, respectively. Therefore, results for these compounds less than validation action concentrations were considered not detected and qualified “U” for the affected samples.

Continuing Calibrations

All continuing calibration compounds were considered acceptable with percent recoveries within 70-130% with the exception of 8:2-FTS (157.1%R, 166.4%R) in the continuing calibrations associated with all samples. Validation qualification of these samples was not required.

Usability

All PFAS sample results were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, comparability, and sensitivity. The PFAS data presented by Alpha Analytical were 100% complete (i.e., usable). The validated PFAS laboratory data are tabulated and presented in Attachment A.

ATTACHMENT A

VALIDATED LABORATORY DATA

Rochester Driving Park Avenue Site
Validated Analytical Summary

			Location ID	EQUIPMENT BLANK	EQUIPMENT BLANK	FIELD BLANK	FIELD BLANK	MW-02	MW-02
			Field Sample ID	GW1019-EB-01	GW1019-EB-02	GW1019-FB-01	GW1019-FB-02	GW1019-MW-02-D	GW1019-MW-02
			Date Sampled	10/24/2019	10/25/2019	10/24/2019	10/25/2019	10/24/2019	10/24/2019
			Lab Sample ID	L1950670-01	L1950670-07	L1950670-05	L1950670-09	L1950670-04	L1950670-03
			Sample Delivery Group (SDG)	L1950670	L1950670	L1950670	L1950670	L1950670	L1950670
			Sample Purpose	EB	EB	FB	FB	DUP	FS
Parameter Name	Analytical Method	Filtered	Report Units						
1,4-Dioxane	8270D SIM	N	UG/L	**0.0822 J**	**0.0869 J**	**0.0846 J**	**0.096 J**	**0.0896 J**	**0.0934 J**
Perfluorobutane Sulfonic Acid	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	**9.14**	**9.94**
Perfluorobutanoic Acid	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	**23.2**	**22.8**
Perfluorodecanoic Acid	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	**0.487 J**	**0.403 J**
Perfluorododecanoic Acid	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	<1.79 U	<1.8 U
Perfluoroheptanoic Acid	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	**30.7**	**30.5**
Perfluorohexane Sulfonic Acid	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	**13.6**	**14.6**
Perfluorohexanoic Acid	537 Modified	N	NG/L	**0.338 J**	<1.84 U	**0.319 J**	<1.98 U	**38.2**	**37.4**
Perfluorononanoic Acid	537 Modified	N	NG/L	**0.392 J**	<1.84 U	**1.66 J**	<1.98 U	**2.26**	**2.09**
Perfluoropentanoic Acid	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	**26.6**	**25.9**
Perfluoroundecanoic Acid	537 Modified	N	NG/L	**0.338 J**	**0.69 J**	**4.03**	<1.98 U	<1.79 U	<1.8 U
PFOA	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	**197**	**197**
PFOS	537 Modified	N	NG/L	**0.703 J**	<1.84 U	<1.9 U	<1.98 U	**139**	**146**
Total PFOA and PFOS	537 Modified	N	NG/L	**0.703 J**	<1.84 U	<1.9 U	<1.98 U	**336**	**343**
Perfluorodecane Sulfonic Acid	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	<1.79 U	<1.8 U
Perfluorotetradecanoic Acid	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	<1.79 U	<1.8 U
Perfluorotridecanoic Acid	537 Modified	N	NG/L	<1.71 U	**0.362 J**	**1.18 J**	<1.98 U	<1.79 U	<1.8 U
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	<1.79 U	<1.8 U
6:2 Fluorotelomer sulfonate	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	<1.79 U	<1.8 U
N-ethyl perfluorooctane sulfonamidoacetic acid	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	**337**	**302**
N-methyl perfluorooctane sulfonamidoacetic acid	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	**0.613 J**	<1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	**2.28**	**2.87**
Perfluorooctane Sulfonamide	537 Modified	N	NG/L	<1.71 U	<1.84 U	<1.9 U	<1.98 U	**39.0**	**41.8**

			Location ID	MW-03	MW-06	MW-09
			Field Sample ID	GW1019-MW-03	GW1019-MW-06	GW1019-MW-09
			Date Sampled	10/24/2019	10/24/2019	10/25/2019
			Lab Sample ID	L1950670-06	L1950670-02	L1950670-08
			Sample Delivery Group (SDG)	L1950670	L1950670	L1950670
			Sample Purpose	FS	FS	FS
Parameter Name	Analytical Method	Filtered	Report Units			
1,4-Dioxane	8270D SIM	N	UG/L	**0.502**	**0.259**	**0.634**
Perfluorobutane Sulfonic Acid	537 Modified	N	NG/L	**7.27**	**6.58**	**35.3**
Perfluorobutanoic Acid	537 Modified	N	NG/L	**16.9**	**16.7**	**46.1**
Perfluorodecanoic Acid	537 Modified	N	NG/L	**2.97**	**0.435 J**	**0.409 J**
Perfluorododecanoic Acid	537 Modified	N	NG/L	<1.83 U	<1.8 U	<1.86 U
Perfluoroheptanoic Acid	537 Modified	N	NG/L	**41.7**	**17.8**	**116**
Perfluorohexane Sulfonic Acid	537 Modified	N	NG/L	**19.9**	**10.9**	**40.1**
Perfluorohexanoic Acid	537 Modified	N	NG/L	**39.7**	**18.1**	**105**
Perfluorononanoic Acid	537 Modified	N	NG/L	**8.77**	**3.06**	**4.72**
Perfluoropentanoic Acid	537 Modified	N	NG/L	**37.5**	**12.2**	**47.9**
Perfluoroundecanoic Acid	537 Modified	N	NG/L	<1.83 U	<1.8 U	<1.86 U
PFOA	537 Modified	N	NG/L	**229**	**125**	**1090**
PFOS	537 Modified	N	NG/L	**150**	**60.5**	**282**
Total PFOA and PFOS	537 Modified	N	NG/L	**379**	**186**	**1370**
Perfluorodecane Sulfonic Acid	537 Modified	N	NG/L	<1.83 U	<1.8 U	<1.86 U
Perfluorotetradecanoic Acid	537 Modified	N	NG/L	<1.83 U	<1.8 U	<1.86 U
Perfluorotridecanoic Acid	537 Modified	N	NG/L	<1.83 U	<1.8 U	<1.86 U
1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)	537 Modified	N	NG/L	<1.83 U	<1.8 U	<1.86 U
6:2 Fluorotelomer sulfonate	537 Modified	N	NG/L	<1.83 U	<1.8 U	<1.86 U
N-ethyl perfluorooctane sulfonamidoacetic acid	537 Modified	N	NG/L	**185**	**156**	**155**
N-methyl perfluorooctane sulfonamidoacetic acid	537 Modified	N	NG/L	**0.941 J**	<1.8 U	<1.86 U
Perfluoroheptane sulfonic acid (PFHpS)	537 Modified	N	NG/L	**4.01**	**1.06 J**	**6.02**
Perfluorooctane Sulfonamide	537 Modified	N	NG/L	**97.2**	**14.5**	**14.6**