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an affiliate of Geosyntec Consultants

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Via Email

29 October 2019

Charles Post
Project Manager, Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, New York 12233

Subject: Emerging Contaminant Assessment Report
Cortese Landfill Site, Narrowsburg, New York

Dear Mr. Post:

On behalf of Cortese Landfill PRP Group (the Group), Beech and Bonaparte Engineering, PC, a wholly-owned New York State licensed engineering affiliate of Geosyntec Consultants, (collectively Geosyntec) has prepared this Emerging Contaminant Assessment (ECA) Report (the Report) for the Cortese Landfill Site (the Site) (NYSDEC Site No. 353001) located in Narrowsburg, New York. This Report describes the results of the ECA groundwater monitoring event at the Site in June 2019 (the monitoring event). Per your request in the letter[1] dated 24 September 2018 and in accordance with the subsequent ECA Plan[2] approved by the New York State Department of Environmental Conservation (NYSDEC), groundwater samples were collected during the sampling event from select wells and analyzed for emerging contaminants that include 1,4-dioxane and a select group of per- and polyfluoroalkyl substances (PFAS). The remainder of this Report presents a summary of the ECA monitoring activities, a data usability assessment, and a discussion of the laboratory results.

[1] NYSDEC, 2018. Request for Sampling of Emerging Contaminants, Site Name: Cortese Landfill, Site ID: 353001, 24 September 2018.
[2] Geosyntec, 2018. Emerging Contaminant Assessment Plan, Cortese Landfill, Narrowsburg, New York, 30 November 2018.

ECA MONITORING ACTVITIES

Water Level Measurements

A synoptic depth to water survey was completed at select monitoring wells on 25 June 2019. The depth to water measurements and calculated groundwater elevations are presented in **Table 1**. A potentiometric surface map based on the elevations measured during the June 2019 sampling event is presented on **Figure 2**. In general, the potentiometric surface indicated that groundwater flowed from north to southwest toward the Delaware River, which is consistent with historical groundwater flow patterns documented at the Site.

Groundwater Sample Collection

Geosyntec collected groundwater samples for 1,4-dioxane and PFAS from monitoring wells EX-1, MW-3B, MW-4B, MW-5, and MW18B in June 2019. The location of those monitoring wells, along with other relevant site features, are illustrated in **Figure 1**.

As described in the ECA Plan, EX-1, which has historically been used to monitor contaminant concentrations on the downgradient edge of the source area, was selected for the ECA to document emerging contaminants concentrations at the source area. MW-18B, located in the downgradient, central portion of the plume, was selected as a downgradient monitoring location. MW-4B is located generally upgradient of the source areas, just outside the Site boundary, and was sampled to assess emerging contaminant concentrations in groundwater flowing onto the Site (i.e., background). Samples were also collected from side gradient wells MW-5 and MW-3B to evaluate emerging contaminant concentrations between the Site and the Town's public water supply well to the northwest. Wells MW-5 and MW-3B were included at the request of NYSDEC even though they are located side gradient from the Site, outside of the migration pathway of Site-related VOCs. They are located downgradient from the publicly-owned treatment works (POTW) as shown by the potentiometric surfaces on **Figure 2**.

Consistent with the ECA Plan, groundwater samples were collected by first temporarily removing the dedicated bladder pumps and pump tubing that have PFAS-containing components. A reusable decontaminated stainless-steel pump and disposable high-density polyethylene (HDPE) discharge tubing were then inserted into monitoring wells EX-1, MW-3B, and MW-18B for purging and sample collection An attempt was also made to purge and sample monitoring wells MW-4B and MW-5 with a submersible stainless-steel

pump, however, a blockage was encountered at both locations that prevented the pump from being lowered into the water column. A modified purging and sampling approach that included using a peristaltic pump with HDPE tubing for well purging and a HDPE bailer for groundwater sample collection was used at MW-4B and MW-5. Water purged from the wells were periodically monitored for the following water quality field parameters: temperature, pH, specific conductance, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity to document changes in water quality. Samples were collected when five well-volumes were removed from the monitoring well. Following sample collection, the dedicated bladder pump and tubing were reinstalled at each location.

Field Quality Control (QC) samples were collected and analyzed to assess the precision and accuracy of groundwater monitoring activities. Field QC samples included one blind field duplicate, one matrix spike/matrix spike duplicate (MS/MSD), and one equipment rinsate blank. Laboratory-provided PFAS-free water was used as the source water for the equipment blank.

Laboratory Analysis

Groundwater samples were shipped via Federal Express to Eurofins TestAmerica of Buffalo, New York for analysis of 1,4-dioxane via SW-846 method 8270D selective-ion monitoring (SIM) and to Eurofins Lancaster Laboratories of Lancaster, Pennsylvania for PFAS via modified EPA Method 537. Eurofins TestAmerica and Eurofins Lancaster Laboratories are Environmental Laboratory Accreditation Program (ELAP) certified laboratories in the State of New York.

DATA QUALITY EVALUATION

Following receipt of the analytical reports, which are provided as **Attachment A**, Geosyntec completed Stage 2A/B data validation to assess usability of the results. The validation results are detailed in the data usability summary report (DUSR) provided as **Attachment B**. In summary, the 1,4-dioxane results were accepted as usable for meeting project objectives. Select PFAS results required additional qualifiers but the qualified results were accepted as usable for meeting project objectives, except for the perfluorooctanesulfonamide result at MW-18B that was rejected.

DISCUSSION OF RESULTS

The PFAS and 1,4-dioxane results from the June 2019 sampling event are summarized in **Table 1**. PFAS and 1,4-dioxane were detected in Site groundwater. The following key observations were noted for each emergent contaminant:

Per- and Polyfluoroalkyl Substances

- The highest concentrations of PFAS compounds were detected at EX-1 and MW-18B, which are located in and downgradient of the former source areas, respectively;
- Trace, low concentrations of select PFAS compounds were detected at MW-4B (upgradient) and MW-5. Concentrations at MW-4B (upgradient) were generally slightly lower than MW 5, but within the same order of magnitude; and
- Only one PFAS compound (6:2 fluorotelomer sulfonate) was detected at MW-3B, which is the closest monitoring well to the town drinking water well. The detection at MW-3B was an estimated concentration below the laboratory quantitation limit (i.e. reporting limit). The compound was also detected at a similar concentration at upgradient monitoring well MW-4B. The compound was not detected at EX-1 and MW-18B, the monitoring wells closest to the former source areas.

In general, the PFAS results conform to the current site conceptual model for other Site contaminants where the greatest groundwater quality effects occur downgradient of the former source areas. PFAS detections in upgradient monitoring well MW-4B and side gradient monitoring well MW-3B indicate that detections in the source area and downgradient monitoring wells may be influenced by sources outside the Site.

1,4-Dioxane

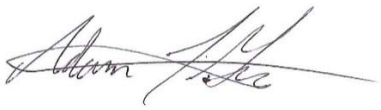
- Concentrations of 1,4-Dioxane measured in samples collected at EX-1, MW-5, and MW-18B during the monitoring event were similar to historical concentrations measured at those locations; and
- 1,4-Dioxane was not detected at MW-3B that is closest to the town water supply well.

CLOSING

As detailed above, PFAS compounds and 1,4-Dioxane were detected in groundwater within and downgradient of the former source areas. Groundwater use restrictions and available municipal water supply downgradient of the Site prevent residents in that area from potential exposures. Given that 1,4-Dioxane and PFAS compounds that may be attributable to the former source areas were not detected at MW-3B, the Site should not be considered a PFAS or 1,4-Dioxane source for the town water supply.

Should you have any questions or require any additional information regarding the information presented herein, please do not hesitate to contact the undersigned at (410) 381-4333.

Regards,



Adam Gray
Project Manager

Robert M. Glazier, P.G.
Principal

Attachments:

Table 1 – Groundwater Elevation Survey
Table 2 – Groundwater Analytical Results
Figure 1 – Site Plan
Figure 2 – Groundwater Elevation Table
Attachment A – Laboratory Analytical Report
Attachment B – Data Usability Summary Report

Copies to:

Chad Moose, Waste Management
Mark Granger, USEPA

TABLES

TABLE 1
GROUNDWATER ELEVATION SURVEY

Emerging Contaminant Assessment Report
Cortese Landfill Site
Narrowsburg, New York

Well Identification	Reference Elevation [1] (ft AMSL)	Depth to Water [2] (ft btoc)	Groundwater Elevation (ft AMSL)
EX-1	697.19	20.74	676.45
MW-1B	692.25	16.10	676.15
MW-3B	698.42	22.37	676.05
MW-4B	700.04	20.55	679.49
MW-5	697.04	21.12	675.92
MW-10 [3]	693.91	NM	NA
MW-16	701.16	24.94	676.22
MW-18B	696.51	21.14	675.37
MW-18C	696.98	20.74	676.24

Notes:

NM - Not Measured

NA - Not Available

ft btoc - feet below top of casing

ft AMSL - feet above mean sea level

(1) The elevation reference point for each monitoring well is the top of PVC casing. Elevations for monitoring wells installed prior to December 2010 were provided by Thew Associates, PLLC in December 2010. Elevations for monitoring wells installed after December 2010 were provided by Fisher Associates in February 2013.

(2) Depth to water measurements taken on 25 June 2019 except where noted.

(3) Monitoring well could not be located.

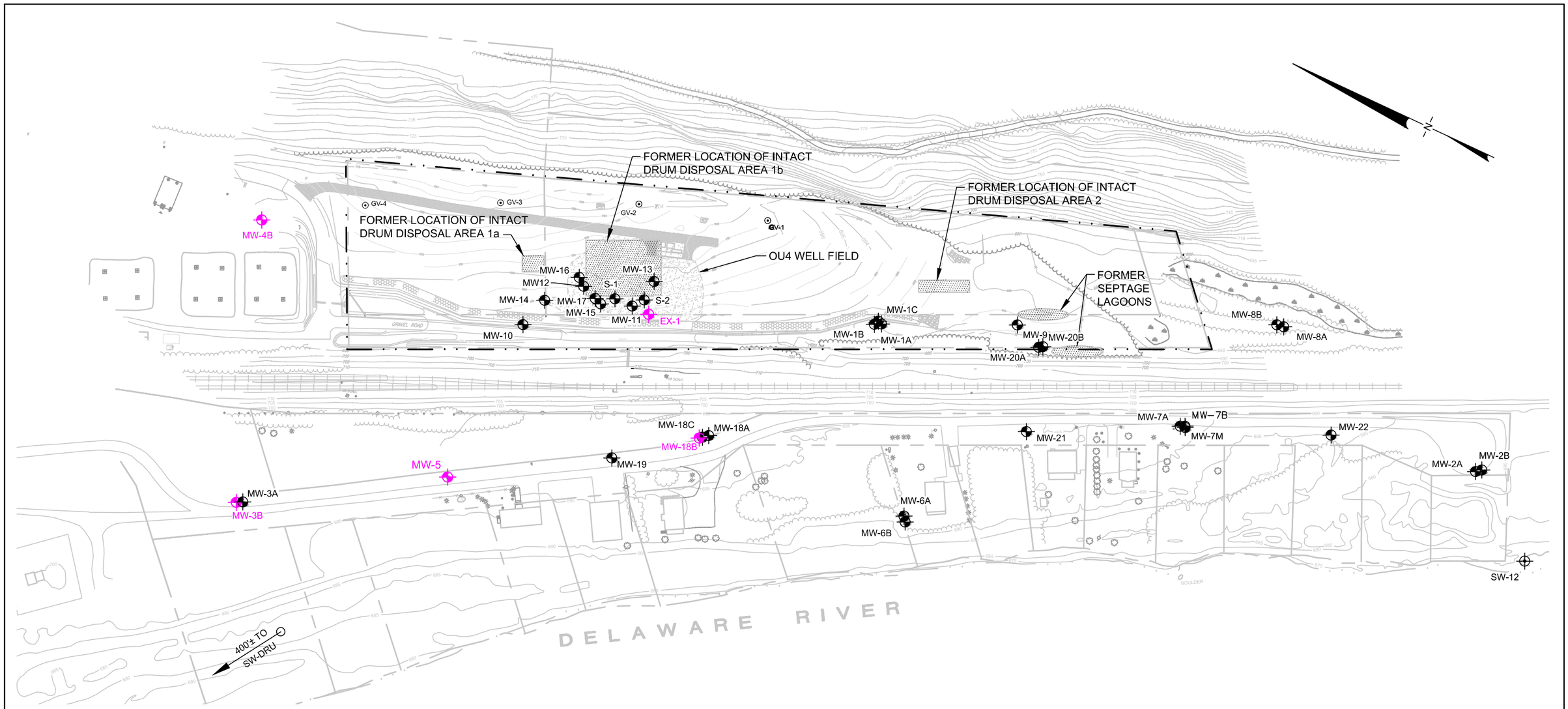
TABLE 2
GROUNDWATER ANALYTICAL RESULTS

Emerging Contaminant Assessment Report
Cortese Landfill Site
Narrowsburg, New York

Group	Analyte	CAS Number	Location ID	EX-1	MW-3B	MW-4B	MW-5	MW-18B
			Date	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019
			Units					
Per- and polyfluoroalkyl substances								
Perfluoroalkyl sulfonates	Perfluorobutanesulfonic acid	375-73-5	ng/L	**1.7 J+**	<0.26U	**0.35J**	**1.4**	**3.4 J+**
	Perfluorodecanesulfonic acid	335-77-3	ng/L	<0.53U	<0.52U	<0.54U	<0.55U	<0.53U
	Perfluoroheptanesulfonic acid	375-92-8	ng/L	**2.4**	<0.35U	<0.36U	<0.37U	**0.86J**
	Perfluorohexanesulfonic acid	355-46-4	ng/L	**6**	<0.35U	<0.36U	**0.91J**	**4.5**
	Perfluorooctanesulfonic acid	1763-23-1	ng/L	**73**	<0.35U	**0.86J**	**0.62J**	**15**
Perfluoroalkyl carboxylates	Perfluorobutanoic acid	375-22-4	ng/L	<1.8U	<1.7U	<1.8U	**2J**	**19**
	Perfluorodecanoic acid	335-76-2	ng/L	<0.79U	<0.78U	<0.81U	<0.83U	<0.79U
	Perfluorododecanoic acid	307-55-1	ng/L	<0.44U	<0.43U	<0.45U	<0.46U	<0.44U
	Perfluoroheptanoic acid	375-85-9	ng/L	**23**	<0.35U	<0.36U	**1.1**	**19**
	Perfluorohexanoic acid	307-24-4	ng/L	**41**	<0.35U	<0.36U	**1.9**	**21**
	Perfluorononanoic acid	375-95-1	ng/L	**1.5J**	<0.35U	<0.36U	<0.37U	**0.79J**
	Perfluorooctanoic acid	335-67-1	ng/l	**220**	<0.26U	**0.34J**	**3.4**	**100**
	Perfluoropentanoic acid	2706-90-3	ng/L	**22 J+**	<1.7U	<1.8U	<1.8U	**28**
	Perfluorotetradecanoic acid	376-06-7	ng/L	<0.26U	<0.26U	<0.27U	<0.28U	<0.26U
	Perfluorotridecanoic acid	72629-94-8	ng/L	<0.35U	<0.35U	<0.36U	<0.37U	<0.35U
	Perfluoroundecanoic acid	2058-94-8	ng/L	<0.35U	<0.35U	<0.36U	<0.37U	<0.35U
Fluorinated Telomer Sulfonates	6:2 Fluorotelomer sulfonate	27619-97-2	ng/L	<0.88U	**1.4J**	**1.7J**	**3.8**	<0.88U
	8:2 Fluorotelomer sulfonate	39108-34-4	ng/L	<1.8U	<1.7U	<1.8U	<1.8U	<1.8U
Perfluorooctanesulfonamides	Perfluorooctanesulfonamide	754-91-6	ng/L	<0.44UJ	<0.43U	<0.45U	<0.46U	<0.44R
Perfluorooctanesulfonamidoacetic acids	N-ethyl perfluorooctanesulfonamidoacetic acid	2991-50-6	ng/L	**7.3**	<0.86U	<0.9U	<0.92U	**2.5J**
	N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9	ng/L	<0.88U	<0.86U	<0.9U	<0.92U	<0.88U
Semivolatile Organic Compounds								
	1,4-Dioxane	123-91-1	µg/L	**7**	<0.1U	<0.1U	**2.7**	**38**

Notes:
ng/L - Nanograms per liter
µg/L - Micrograms per liter
U - Analyte was not detected, value indicated is the method detection limit.
J - Estimated value is greater than the method detection limit, but less than the limit of quantitation.
J+ - The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias.
UJ - The analyte was not detected above the reported sample quantitation limit and the quantitation limit is estimated.
R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
Bold - Detected concentration is greater than the method detection limit
CAS - Chemical Abstracts Service

FIGURES



LEGEND

	PROPERTY BOUNDARIES
	APPROXIMATE EDGE OF DELAWARE RIVER
	FENCE
704	LANDFILL COVER ELEVATION CONTOUR
700	PRE-EXISTING TOPOGRAPHY ELEVATION CONTOUR
GV-1	PASSIVE GAS VENT
	MONITORING WELL
SW-DRU	SURFACE WATER SAMPLE POINT
	WELL FOR EMERGING CONTAINMENT ASSESSMENT
	SITE BOUNDARY

NOTES:

1. MONITORING WELL LOCATIONS AND REFERENCE ELEVATIONS FOR WELLS INSTALLED PRIOR TO DECEMBER 2010 WERE PROVIDED BY THEW ASSOCIATES, P.E., L.S., PLLC IN DECEMBER 2010. MONITORING WELLS INSTALLED AFTER DECEMBER 2010 WERE SURVEYED BY FISHER ASSOCIATES IN FEBRUARY 2013.

150 75 0 150

SCALE: 1" = 150'

SITE PLAN

CORTESE LANDFILL SITE
NARROWSBURG, NEW YORK

Geosyntec consultants
COLUMBIA, MARYLAND

DATE:	OCTOBER 2019
PROJECT NO.	MR0562G
DOCUMENT NO.	MD19022
FILE NO.	05621701
FIGURE NO.	1

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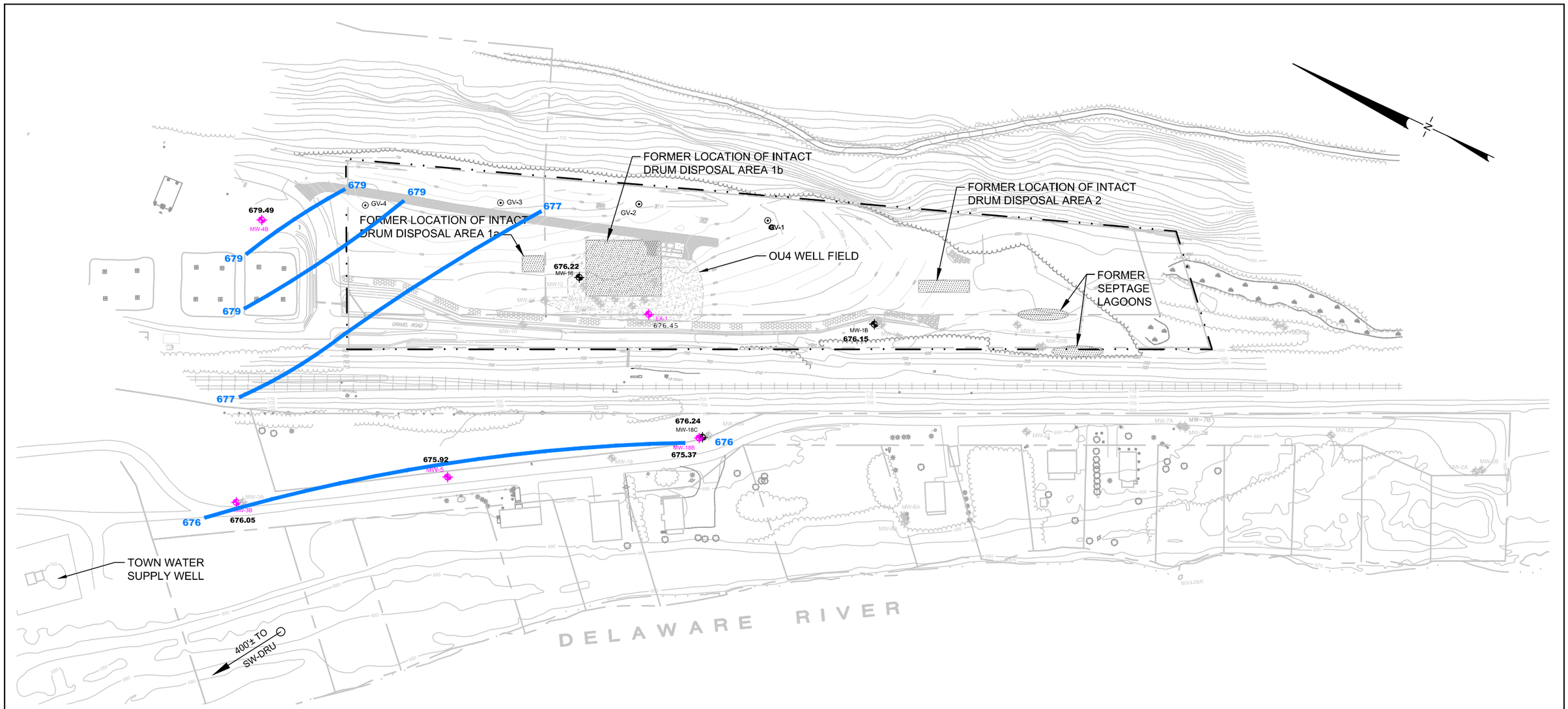

LEGEND

	PROPERTY BOUNDARIES
	APPROXIMATE EDGE OF DELAWARE RIVER
	FENCE
704	LANDFILL COVER ELEVATION CONTOUR
700	PRE-EXISTING TOPOGRAPHY ELEVATION CONTOUR
	MONITORING WELL
	WELL FOR EMERGING CONTAMINANT ASSESSMENT
676.05	GROUNDWATER TABLE ELEVATION (NOTE 2)
	GROUNDWATER ELEVATION CONTOUR (FEET-MSL)
	SITE BOUNDARY

NOTES:

1. SEE FIGURE 1 FOR FEATURE REFERENCES.
2. DEPTH TO WATER MEASUREMENTS TAKEN ON 25 JUNE 2019.
3. ONLY MONITORING WELLS SCREENED IN THE UPPER SAND AND GRAVEL UNIT WERE USED TO INTERPOLATE POTENTIOMETRIC CONTOURS.

150 75 0 150

SCALE: 1" = 150'

GROUNDWATER TABLE ELEVATION

CORTESE LANDFILL SITE
NARROWSBURG, NEW YORK

Geosyntec consultants
COLUMBIA, MARYLAND

DATE:	OCTOBER 2019
PROJECT NO.	MR0562G
DOCUMENT NO.	MD18208
FILE NO.	0562F002
FIGURE NO.	2

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ATTACHMENT A
LABORATORY ANALYTICAL REPORT

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-155634-1
Client Project/Site: Cortese Landfill Site-SIM

For:
Geosyntec Consultants, Inc.
10211 Wincopin Circle
4'th Floor
Columbia, Maryland 21044

Attn: Adam Gray

Denise L Giglia

Authorized for release by:
7/31/2019 2:06:01 PM

Denise Giglia, Project Manager I
(716)691-2600
denise.giglia@testamericainc.com

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Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.

Glossary

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

Job ID: 480-155634-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-155634-1

Receipt
The samples were received on 6/29/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6º C.

GC/MS Semi VOA
Method 8270D SIM ID: The 1,4-Dioxane result reported for samples MW-5 (480-155634-7), (LCS 480-480619/2-A), EX-1 (480-155634-1), DUP20190625 (480-155634-2) and MW-18B (480-155634-3) have an E flag qualifier indicating the results are over the calibration range on the raw data. The actual amounts are within the calibration range; however, the E flag is generated based upon the bias corrected concentration. The LIMS system calculates a bias correction based on the recovery of the 1,4-Dioxane-d8 isotope.

Method 8270D SIM ID: The following samples were diluted to bring the concentration of target analytes within the calibration range: EX-1 (480-155634-1), DUP20190625 (480-155634-2) and MW-18B (480-155634-3). Elevated reporting limits (RLs) are provided.

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

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

Detection Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Client Sample ID: EX-1 — Lab Sample ID: 480-155634-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	7.0	E	1.0	0.50	ug/L	5		8270D SIM ID	Total/NA

Client Sample ID: DUP20190625 — Lab Sample ID: 480-155634-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	6.6	E	1.0	0.50	ug/L	5		8270D SIM ID	Total/NA

Client Sample ID: MW-18B — Lab Sample ID: 480-155634-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	38	E	4.0	2.0	ug/L	20		8270D SIM ID	Total/NA

Client Sample ID: MW-3B — Lab Sample ID: 480-155634-4

No Detections.

Client Sample ID: EB-20190626 — Lab Sample ID: 480-155634-5

No Detections.

Client Sample ID: MW-4B — Lab Sample ID: 480-155634-6

No Detections.

Client Sample ID: MW-5 — Lab Sample ID: 480-155634-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.7	E	0.20	0.10	ug/L	1		8270D SIM ID	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Client Sample ID: EX-1
Date Collected: 06/25/19 18:30
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-1
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	7.0	E	1.0	0.50	ug/L		07/02/19 15:44	07/05/19 22:55	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*33*		*15 - 110*	*07/02/19 15:44*	*07/05/19 22:55*	*5*

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Client Sample ID: DUP20190625
Date Collected: 06/25/19 00:00
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-2
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	6.6	E	1.0	0.50	ug/L		07/02/19 15:44	07/05/19 23:19	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*32*		*15 - 110*	*07/02/19 15:44*	*07/05/19 23:19*	*5*

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Client Sample ID: MW-18B
Date Collected: 06/26/19 11:30
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-3
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	38	E	4.0	2.0	ug/L		07/02/19 15:44	07/05/19 23:42	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*27*		*15 - 110*	*07/02/19 15:44*	*07/05/19 23:42*	*20*

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Client Sample ID: MW-3B
Date Collected: 06/26/19 12:50
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-4
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/02/19 15:44	07/05/19 07:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*36*		*15 - 110*	*07/02/19 15:44*	*07/05/19 07:24*	*1*

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Client Sample ID: EB-20190626
Date Collected: 06/26/19 18:00
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-5
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/02/19 15:44	07/05/19 11:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*32*		*15 - 110*	*07/02/19 15:44*	*07/05/19 11:22*	*1*

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Client Sample ID: MW-4B
Date Collected: 06/27/19 14:50
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-6
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/02/19 15:44	07/05/19 11:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*25*		*15 - 110*	*07/02/19 15:44*	*07/05/19 11:46*	*1*

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Client Sample ID: MW-5
Date Collected: 06/28/19 10:50
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-7
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.7	E	0.20	0.10	ug/L		07/02/19 15:44	07/05/19 12:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*36*		*15 - 110*	*07/02/19 15:44*	*07/05/19 12:09*	*1*

Isotope Dilution Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	DXE (15-110)							
480-155634-1	EX-1	33							
480-155634-2	DUP20190625	32							
480-155634-3	MW-18B	27							
480-155634-4	MW-3B	36							
480-155634-4 MS	MW-3B	34							
480-155634-4 MSD	MW-3B	39							
480-155634-5	EB-20190626	32							
480-155634-6	MW-4B	25							
480-155634-7	MW-5	36							
LCS 480-480619/2-A	Lab Control Sample	33							
MB 480-480619/1-A	Method Blank	38							

Surrogate Legend

DXE = 1,4-Dioxane-d8

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 480-480619/1-A
Matrix: Water
Analysis Batch: 480927

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 480619

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/02/19 15:44	07/05/19 04:38	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*38*		*15 - 110*	*07/02/19 15:44*	*07/05/19 04:38*	*1*

Lab Sample ID: LCS 480-480619/2-A
Matrix: Water
Analysis Batch: 480927

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 480619

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			1.00	1.22	E	ug/L		122	40 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8	*33*		*15 - 110*

Lab Sample ID: 480-155634-4 MS
Matrix: Water
Analysis Batch: 480927

Client Sample ID: MW-3B
Prep Type: Total/NA
Prep Batch: 480619

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	ND		1.00	1.17		ug/L		117	40 - 140		

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
1,4-Dioxane-d8	*34*		*15 - 110*

Lab Sample ID: 480-155634-4 MSD
Matrix: Water
Analysis Batch: 480927

Client Sample ID: MW-3B
Prep Type: Total/NA
Prep Batch: 480619

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	ND		1.00	1.17		ug/L		117	40 - 140	0	20

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,4-Dioxane-d8	*39*		*15 - 110*

QC Association Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

GC/MS Semi VOA

Prep Batch: 480619

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-155634-1	EX-1	Total/NA	Water	3510C	
480-155634-2	DUP20190625	Total/NA	Water	3510C	
480-155634-3	MW-18B	Total/NA	Water	3510C	
480-155634-4	MW-3B	Total/NA	Water	3510C	
480-155634-5	EB-20190626	Total/NA	Water	3510C	
480-155634-6	MW-4B	Total/NA	Water	3510C	
480-155634-7	MW-5	Total/NA	Water	3510C	
MB 480-480619/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-480619/2-A	Lab Control Sample	Total/NA	Water	3510C	
480-155634-4 MS	MW-3B	Total/NA	Water	3510C	
480-155634-4 MSD	MW-3B	Total/NA	Water	3510C	

Analysis Batch: 480927

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-155634-4	MW-3B	Total/NA	Water	8270D SIM ID	480619
480-155634-5	EB-20190626	Total/NA	Water	8270D SIM ID	480619
480-155634-6	MW-4B	Total/NA	Water	8270D SIM ID	480619
480-155634-7	MW-5	Total/NA	Water	8270D SIM ID	480619
MB 480-480619/1-A	Method Blank	Total/NA	Water	8270D SIM ID	480619
LCS 480-480619/2-A	Lab Control Sample	Total/NA	Water	8270D SIM ID	480619
480-155634-4 MS	MW-3B	Total/NA	Water	8270D SIM ID	480619
480-155634-4 MSD	MW-3B	Total/NA	Water	8270D SIM ID	480619

Analysis Batch: 480959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-155634-1	EX-1	Total/NA	Water	8270D SIM ID	480619
480-155634-2	DUP20190625	Total/NA	Water	8270D SIM ID	480619
480-155634-3	MW-18B	Total/NA	Water	8270D SIM ID	480619

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Client Sample ID: EX-1
Date Collected: 06/25/19 18:30
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			480619	07/02/19 15:44	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		5	480959	07/05/19 22:55	RJS	TAL BUF

Client Sample ID: DUP20190625
Date Collected: 06/25/19 00:00
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			480619	07/02/19 15:44	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		5	480959	07/05/19 23:19	RJS	TAL BUF

Client Sample ID: MW-18B
Date Collected: 06/26/19 11:30
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			480619	07/02/19 15:44	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		20	480959	07/05/19 23:42	RJS	TAL BUF

Client Sample ID: MW-3B
Date Collected: 06/26/19 12:50
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			480619	07/02/19 15:44	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	480927	07/05/19 07:24	RJS	TAL BUF

Client Sample ID: EB-20190626
Date Collected: 06/26/19 18:00
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			480619	07/02/19 15:44	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	480927	07/05/19 11:22	RJS	TAL BUF

Client Sample ID: MW-4B
Date Collected: 06/27/19 14:50
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			480619	07/02/19 15:44	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	480927	07/05/19 11:46	RJS	TAL BUF

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Client Sample ID: MW-5

Date Collected: 06/28/19 10:50
Date Received: 06/29/19 09:00

Lab Sample ID: 480-155634-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			480619	07/02/19 15:44	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	480927	07/05/19 12:09	RJS	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc.
Job ID: 480-155634-1
Project/Site: Cortese Landfill Site-SIM

Laboratory: Eurofins TestAmerica, Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-20

Method Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Method	Method Description	Protocol	Laboratory
8270D SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	TAL BUF
Subcontract	General Subcontract Method	None	TAL BUF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF

Protocol References:

None = None

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

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Cortese Landfill Site-SIM

Job ID: 480-155634-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-155634-1	EX-1	Water	06/25/19 18:30	06/29/19 09:00	
480-155634-2	DUP20190625	Water	06/25/19 00:00	06/29/19 09:00	
480-155634-3	MW-18B	Water	06/26/19 11:30	06/29/19 09:00	
480-155634-4	MW-3B	Water	06/26/19 12:50	06/29/19 09:00	
480-155634-5	EB-20190626	Water	06/26/19 18:00	06/29/19 09:00	
480-155634-6	MW-4B	Water	06/27/19 14:50	06/29/19 09:00	
480-155634-7	MW-5	Water	06/28/19 10:50	06/29/19 09:00	

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ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento CA 95605

Report Date: July 23, 2019 11:15

Project: Cortese Landfill Site

Account #: 01042
Group Number: 2051766
SDG: TAC16
Release Number: 480-155634
State of Sample Origin: NY

Electronic Copy To TestAmerica

Attn: Denise Giglia

Respectfully Submitted,

Kay Hower

(717) 556-7364

To view our laboratory's current scopes of accreditation please go to https://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/ . Historical copies may be requested through your project manager.

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SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
EX-1 Grab Water	06/25/2019 18:30	1093793
DUP-20190625 Grab Water	06/25/2019	1093794
MW-18B Grab Water	06/25/2019 11:30	1093795
MW-3B Grab Water	06/25/2019 12:50	1093796
MW-3B MS Grab Water	06/25/2019 12:50	1093797
MW-3B MSD Grab Water	06/25/2019 12:50	1093798
EB-20190626 Grab Water	06/25/2019 18:00	1093799
MW-4B Grab Water	06/25/2019 14:50	1093800
MW-5 Grab Water	06/25/2019 10:50	1093801

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: **EX-1 Grab Water**

Project Name: **Cortese Landfill Site**

TestAmerica Sacramento
ELLE Sample #: **WW 1093793**
ELLE Group #: **2051766**
Matrix: Water

Submittal Date/Time: 06/29/2019 09:40
Collection Date/Time: 06/25/2019 18:30
SDG#: TAC16-01

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 Version 1.1 Modified**		**ng/l**	**ng/l**	**ng/l**	
14473	6:2-Fluorotelomersulfonic acid[1]	27619-97-2	N.D.	0.88	1.8	1
14473	8:2-Fluorotelomersulfonic acid[1]	39108-34-4	N.D.	1.8	5.3	1
14473	NEtFOSAA[1]	2991-50-6	7.3	0.88	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMeFOSAA[1]	2355-31-9	N.D.	0.88	2.6	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	Perfluorobutanesulfonic acid[1]	375-73-5	1.7	0.26	0.88	1
14473	Perfluorobutanoic Acid[1]	375-22-4	N.D.	1.8	5.3	1
14473	Perfluorodecanesulfonic acid[1]	335-77-3	N.D.	0.53	1.8	1
14473	Perfluorodecanoic Acid[1]	335-76-2	N.D.	0.79	1.8	1
14473	Perfluorododecanoic Acid[1]	307-55-1	N.D.	0.44	1.8	1
14473	Perfluoroheptanesulfonic acid[1]	375-92-8	2.4	0.35	1.8	1
14473	Perfluoroheptanoic Acid[1]	375-85-9	23	0.35	0.88	1
14473	Perfluorohexanesulfonic acid[1]	355-46-4	6.0	0.35	1.8	1
14473	Perfluorohexanoic Acid[1]	307-24-4	41	0.35	1.8	1
14473	Perfluorononanoic Acid[1]	375-95-1	1.5 J	0.35	1.8	1
14473	Perfluorooctanesulfonamide[1]	754-91-6	N.D.	0.44	2.6	1
14473	Perfluorooctanesulfonic acid[1]	1763-23-1	73	0.35	1.8	1
14473	Perfluorooctanoic Acid[1]	335-67-1	220	0.26	0.88	1
14473	Perfluoropentanoic Acid[1]	2706-90-3	22	1.8	5.3	1
14473	Perfluorotetradecanoic Acid[1]	376-06-7	N.D.	0.26	0.88	1
14473	Perfluorotridecanoic Acid[1]	72629-94-8	N.D.	0.35	0.88	1
14473	Perfluoroundecanoic Acid[1]	2058-94-8	N.D.	0.35	1.8	1

The sample injection standard peak areas were outside of the QC limits for both the initial injection and the re-injection. The values here are from the initial injection of the sample.

The recovery for several extraction standards is outside of QC acceptance limits as noted on the QC Summary, due to the matrix of the sample.

Sample Comments

[1] = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	21 PFAS	EPA 537 Version 1.1 Modified	1	19188002	07/16/2019 23:39	Jason W Knight	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19188002	07/07/2019 16:00	Anthony C Polaski	1

*=This limit was used in the evaluation of the final result

Sample Description: DUP-20190625 Grab Water

Project Name: Cortese Landfill Site

TestAmerica Sacramento
ELLE Sample #: WW 1093794
ELLE Group #: 2051766
Matrix: Water

Submittal Date/Time: 06/29/2019 09:40
Collection Date/Time: 06/25/2019
SDG#: TAC16-02FD

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 Version 1.1 Modified**		**ng/l**	**ng/l**	**ng/l**	
14473	6:2-Fluorotelomersulfonic acid[1]	27619-97-2	N.D.	0.89	1.8	1
14473	8:2-Fluorotelomersulfonic acid[1]	39108-34-4	N.D.	1.8	5.3	1
14473	NEtFOSAA[1]	2991-50-6	7.8	0.89	2.7	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMeFOSAA[1]	2355-31-9	N.D.	0.89	2.7	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	Perfluorobutanesulfonic acid[1]	375-73-5	1.8	0.27	0.89	1
14473	Perfluorobutanoic Acid[1]	375-22-4	N.D.	1.8	5.3	1
14473	Perfluorodecanesulfonic acid[1]	335-77-3	N.D.	0.53	1.8	1
14473	Perfluorodecanoic Acid[1]	335-76-2	N.D.	0.80	1.8	1
14473	Perfluorododecanoic Acid[1]	307-55-1	N.D.	0.44	1.8	1
14473	Perfluoroheptanesulfonic acid[1]	375-92-8	2.1	0.36	1.8	1
14473	Perfluoroheptanoic Acid[1]	375-85-9	21	0.36	0.89	1
14473	Perfluorohexanesulfonic acid[1]	355-46-4	5.8	0.36	1.8	1
14473	Perfluorohexanoic Acid[1]	307-24-4	41	0.36	1.8	1
14473	Perfluorononanoic Acid[1]	375-95-1	1.5 J	0.36	1.8	1
14473	Perfluorooctanesulfonamide[1]	754-91-6	N.D.	0.44	2.7	1
14473	Perfluorooctanesulfonic acid[1]	1763-23-1	67	0.36	1.8	1
14473	Perfluorooctanoic Acid[1]	335-67-1	220	0.27	0.89	1
14473	Perfluoropentanoic Acid[1]	2706-90-3	26	1.8	5.3	1
14473	Perfluorotetradecanoic Acid[1]	376-06-7	N.D.	0.27	0.89	1
14473	Perfluorotridecanoic Acid[1]	72629-94-8	N.D.	0.36	0.89	1
14473	Perfluoroundecanoic Acid[1]	2058-94-8	N.D.	0.36	1.8	1

The sample injection standard peak areas were outside of the QC limits for both the initial injection and the re-injection. The values here are from the initial injection of the sample.

The recovery for several extraction standards is outside of QC acceptance limits due to the matrix of the sample.

Sample Comments

[1] = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	21 PFAS	EPA 537 Version 1.1 Modified	1	19188002	07/16/2019 23:48	Devon M Whooley	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19188002	07/07/2019 16:00	Anthony C Polaski	1

*=This limit was used in the evaluation of the final result

Sample Description: **MW-18B Grab Water**

Project Name: **Cortese Landfill Site**

TestAmerica Sacramento
ELLE Sample #: **WW 1093795**
ELLE Group #: **2051766**
Matrix: Water

Submittal Date/Time: 06/29/2019 09:40
Collection Date/Time: 06/25/2019 11:30
SDG#: TAC16-03

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 Version 1.1 Modified**		**ng/l**	**ng/l**	**ng/l**	
14473	6:2-Fluorotelomersulfonic acid[1]	27619-97-2	N.D.	0.88	1.8	1
14473	8:2-Fluorotelomersulfonic acid[1]	39108-34-4	N.D.	1.8	5.3	1
14473	NEtFOSAA[1]	2991-50-6	2.5 J	0.88	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMeFOSAA[1]	2355-31-9	N.D.	0.88	2.6	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	Perfluorobutanesulfonic acid[1]	375-73-5	3.4	0.26	0.88	1
14473	Perfluorobutanoic Acid[1]	375-22-4	19	1.8	5.3	1
14473	Perfluorodecanesulfonic acid[1]	335-77-3	N.D.	0.53	1.8	1
14473	Perfluorodecanoic Acid[1]	335-76-2	N.D.	0.79	1.8	1
14473	Perfluorododecanoic Acid[1]	307-55-1	N.D.	0.44	1.8	1
14473	Perfluoroheptanesulfonic acid[1]	375-92-8	0.86 J	0.35	1.8	1
14473	Perfluoroheptanoic Acid[1]	375-85-9	19	0.35	0.88	1
14473	Perfluorohexanesulfonic acid[1]	355-46-4	4.5	0.35	1.8	1
14473	Perfluorohexanoic Acid[1]	307-24-4	21	0.35	1.8	1
14473	Perfluorononanoic Acid[1]	375-95-1	0.79 J	0.35	1.8	1
14473	Perfluorooctanesulfonamide[1]	754-91-6	N.D.	0.44	2.6	1
14473	Perfluorooctanesulfonic acid[1]	1763-23-1	15	0.35	1.8	1
14473	Perfluorooctanoic Acid[1]	335-67-1	100	0.26	0.88	1
14473	Perfluoropentanoic Acid[1]	2706-90-3	28	1.8	5.3	1
14473	Perfluorotetradecanoic Acid[1]	376-06-7	N.D.	0.26	0.88	1
14473	Perfluorotridecanoic Acid[1]	72629-94-8	N.D.	0.35	0.88	1
14473	Perfluoroundecanoic Acid[1]	2058-94-8	N.D.	0.35	1.8	1

The sample injection standard peak areas were outside of the QC limits for both the initial injection and the re-injection. The values here are from the initial injection of the sample.

The recovery for extraction standards is outside of QC acceptance limits as noted on the QC Summary. Sufficient sample volume was not available to repeat the analysis.

Sample Comments

[1] = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	21 PFAS	EPA 537 Version 1.1 Modified	1	19188002	07/16/2019 23:57	Devon M Whooley	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19188002	07/07/2019 16:00	Anthony C Polaski	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-3B Grab Water

Project Name: Cortese Landfill Site

TestAmerica Sacramento
ELLE Sample #: WW 1093796
ELLE Group #: 2051766
Matrix: Water

Submittal Date/Time: 06/29/2019 09:40
Collection Date/Time: 06/25/2019 12:50
SDG#: TAC16-04BKG

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 Version 1.1 Modified**		**ng/l**	**ng/l**	**ng/l**	
14473	6:2-Fluorotelomersulfonic acid[1]	27619-97-2	1.4 J	0.86	1.7	1
14473	8:2-Fluorotelomersulfonic acid[1]	39108-34-4	N.D.	1.7	5.2	1
14473	NEtFOSAA[1]	2991-50-6	N.D.	0.86	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMeFOSAA[1]	2355-31-9	N.D.	0.86	2.6	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	Perfluorobutanesulfonic acid[1]	375-73-5	N.D.	0.26	0.86	1
14473	Perfluorobutanoic Acid[1]	375-22-4	N.D.	1.7	5.2	1
14473	Perfluorodecanesulfonic acid[1]	335-77-3	N.D.	0.52	1.7	1
14473	Perfluorodecanoic Acid[1]	335-76-2	N.D.	0.78	1.7	1
14473	Perfluorododecanoic Acid[1]	307-55-1	N.D.	0.43	1.7	1
14473	Perfluoroheptanesulfonic acid[1]	375-92-8	N.D.	0.35	1.7	1
14473	Perfluoroheptanoic Acid[1]	375-85-9	N.D.	0.35	0.86	1
14473	Perfluorohexanesulfonic acid[1]	355-46-4	N.D.	0.35	1.7	1
14473	Perfluorohexanoic Acid[1]	307-24-4	N.D.	0.35	1.7	1
14473	Perfluorononanoic Acid[1]	375-95-1	N.D.	0.35	1.7	1
14473	Perfluorooctanesulfonamide[1]	754-91-6	N.D.	0.43	2.6	1
14473	Perfluorooctanesulfonic acid[1]	1763-23-1	N.D.	0.35	1.7	1
14473	Perfluorooctanoic Acid[1]	335-67-1	N.D.	0.26	0.86	1
14473	Perfluoropentanoic Acid[1]	2706-90-3	N.D.	1.7	5.2	1
14473	Perfluorotetradecanoic Acid[1]	376-06-7	N.D.	0.26	0.86	1
14473	Perfluorotridecanoic Acid[1]	72629-94-8	N.D.	0.35	0.86	1
14473	Perfluoroundecanoic Acid[1]	2058-94-8	N.D.	0.35	1.7	1

Sample Comments

[1] = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	21 PFAS	EPA 537 Version 1.1 Modified	1	19188002	07/17/2019 00:06	Devon M Whooley	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19188002	07/07/2019 16:00	Anthony C Polaski	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-3B MS Grab Water

Project Name: Cortese Landfill Site

TestAmerica Sacramento
ELLE Sample #: WW 1093797
ELLE Group #: 2051766
Matrix: Water

Submittal Date/Time: 06/29/2019 09:40
Collection Date/Time: 06/25/2019 12:50
SDG#: TAC16-04MS

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 Version 1.1 Modified**		**ng/l**	**ng/l**	**ng/l**	
14473	6:2-Fluorotelomersulfonic acid[1]	27619-97-2	16	0.87	1.7	1
14473	8:2-Fluorotelomersulfonic acid[1]	39108-34-4	16	1.7	5.2	1
14473	NEtFOSAA[1]	2991-50-6	4.6	0.87	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMeFOSAA[1]	2355-31-9	5.4	0.87	2.6	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	Perfluorobutanesulfonic acid[1]	375-73-5	5.0	0.26	0.87	1
14473	Perfluorobutanoic Acid[1]	375-22-4	6.4	1.7	5.2	1
14473	Perfluorodecanesulfonic acid[1]	335-77-3	5.4	0.52	1.7	1
14473	Perfluorodecanoic Acid[1]	335-76-2	5.7	0.78	1.7	1
14473	Perfluorododecanoic Acid[1]	307-55-1	5.0	0.43	1.7	1
14473	Perfluoroheptanesulfonic acid[1]	375-92-8	5.3	0.35	1.7	1
14473	Perfluoroheptanoic Acid[1]	375-85-9	5.7	0.35	0.87	1
14473	Perfluorohexanesulfonic acid[1]	355-46-4	5.2	0.35	1.7	1
14473	Perfluorohexanoic Acid[1]	307-24-4	5.7	0.35	1.7	1
14473	Perfluorononanoic Acid[1]	375-95-1	5.6	0.35	1.7	1
14473	Perfluorooctanesulfonamide[1]	754-91-6	3.8	0.43	2.6	1
14473	Perfluorooctanesulfonic acid[1]	1763-23-1	4.6	0.35	1.7	1
14473	Perfluorooctanoic Acid[1]	335-67-1	5.5	0.26	0.87	1
14473	Perfluoropentanoic Acid[1]	2706-90-3	5.6	1.7	5.2	1
14473	Perfluorotetradecanoic Acid[1]	376-06-7	5.6	0.26	0.87	1
14473	Perfluorotridecanoic Acid[1]	72629-94-8	4.6	0.35	0.87	1
14473	Perfluoroundecanoic Acid[1]	2058-94-8	5.4	0.35	1.7	1

Sample Comments

[1] = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	21 PFAS	EPA 537 Version 1.1 Modified	1	19188002	07/17/2019 00:51	Devon M Whooley	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19188002	07/07/2019 16:00	Anthony C Polaski	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-3B MSD Grab Water

Project Name: Cortese Landfill Site

TestAmerica Sacramento
ELLE Sample #: WW 1093798
ELLE Group #: 2051766
Matrix: Water

Submittal Date/Time: 06/29/2019 09:40
Collection Date/Time: 06/25/2019 12:50
SDG#: TAC16-04MSD

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 Version 1.1 Modified**		**ng/l**	**ng/l**	**ng/l**	
14473	6:2-Fluorotelomersulfonic acid[1]	27619-97-2	18	0.93	1.9	1
14473	8:2-Fluorotelomersulfonic acid[1]	39108-34-4	16	1.9	5.6	1
14473	NEtFOSAA[1]	2991-50-6	4.8	0.93	2.8	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMeFOSAA[1]	2355-31-9	5.4	0.93	2.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	Perfluorobutanesulfonic acid[1]	375-73-5	5.2	0.28	0.93	1
14473	Perfluorobutanoic Acid[1]	375-22-4	7.4	1.9	5.6	1
14473	Perfluorodecanesulfonic acid[1]	335-77-3	5.3	0.56	1.9	1
14473	Perfluorodecanoic Acid[1]	335-76-2	6.4	0.84	1.9	1
14473	Perfluorododecanoic Acid[1]	307-55-1	6.0	0.46	1.9	1
14473	Perfluoroheptanesulfonic acid[1]	375-92-8	6.3	0.37	1.9	1
14473	Perfluoroheptanoic Acid[1]	375-85-9	6.1	0.37	0.93	1
14473	Perfluorohexanesulfonic acid[1]	355-46-4	5.5	0.37	1.9	1
14473	Perfluorohexanoic Acid[1]	307-24-4	5.8	0.37	1.9	1
14473	Perfluorononanoic Acid[1]	375-95-1	5.9	0.37	1.9	1
14473	Perfluorooctanesulfonamide[1]	754-91-6	4.5	0.46	2.8	1
14473	Perfluorooctanesulfonic acid[1]	1763-23-1	4.7	0.37	1.9	1
14473	Perfluorooctanoic Acid[1]	335-67-1	6.2	0.28	0.93	1
14473	Perfluoropentanoic Acid[1]	2706-90-3	6.2	1.9	5.6	1
14473	Perfluorotetradecanoic Acid[1]	376-06-7	6.0	0.28	0.93	1
14473	Perfluorotridecanoic Acid[1]	72629-94-8	5.3	0.37	0.93	1
14473	Perfluoroundecanoic Acid[1]	2058-94-8	5.6	0.37	1.9	1

Sample Comments

[1] = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	21 PFAS	EPA 537 Version 1.1 Modified	1	19188002	07/17/2019 01:00	Devon M Whooley	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19188002	07/07/2019 16:00	Anthony C Polaski	1

*=This limit was used in the evaluation of the final result

Sample Description: **EB-20190626 Grab Water**

Project Name: **Cortese Landfill Site**

TestAmerica Sacramento
ELLE Sample #: **WW 1093799**
ELLE Group #: **2051766**
Matrix: Water

Submittal Date/Time: 06/29/2019 09:40
Collection Date/Time: 06/25/2019 18:00
SDG#: TAC16-05EB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 Version 1.1 Modified**		**ng/l**	**ng/l**	**ng/l**	
14473	6:2-Fluorotelomersulfonic acid[1]	27619-97-2	N.D.	0.85	1.7	1
14473	8:2-Fluorotelomersulfonic acid[1]	39108-34-4	N.D.	1.7	5.1	1
14473	NEtFOSAA[1]	2991-50-6	N.D.	0.85	2.5	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMeFOSAA[1]	2355-31-9	N.D.	0.85	2.5	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	Perfluorobutanesulfonic acid[1]	375-73-5	N.D.	0.25	0.85	1
14473	Perfluorobutanoic Acid[1]	375-22-4	N.D.	1.7	5.1	1
14473	Perfluorodecanesulfonic acid[1]	335-77-3	N.D.	0.51	1.7	1
14473	Perfluorodecanoic Acid[1]	335-76-2	N.D.	0.76	1.7	1
14473	Perfluorododecanoic Acid[1]	307-55-1	N.D.	0.42	1.7	1
14473	Perfluoroheptanesulfonic acid[1]	375-92-8	N.D.	0.34	1.7	1
14473	Perfluoroheptanoic Acid[1]	375-85-9	N.D.	0.34	0.85	1
14473	Perfluorohexanesulfonic acid[1]	355-46-4	N.D.	0.34	1.7	1
14473	Perfluorohexanoic Acid[1]	307-24-4	N.D.	0.34	1.7	1
14473	Perfluorononanoic Acid[1]	375-95-1	N.D.	0.34	1.7	1
14473	Perfluorooctanesulfonamide[1]	754-91-6	N.D.	0.42	2.5	1
14473	Perfluorooctanesulfonic acid[1]	1763-23-1	N.D.	0.34	1.7	1
14473	Perfluorooctanoic Acid[1]	335-67-1	N.D.	0.25	0.85	1
14473	Perfluoropentanoic Acid[1]	2706-90-3	N.D.	1.7	5.1	1
14473	Perfluorotetradecanoic Acid[1]	376-06-7	N.D.	0.25	0.85	1
14473	Perfluorotridecanoic Acid[1]	72629-94-8	N.D.	0.34	0.85	1
14473	Perfluoroundecanoic Acid[1]	2058-94-8	N.D.	0.34	1.7	1

Sample Comments

[1] = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	21 PFAS	EPA 537 Version 1.1 Modified	1	19188002	07/17/2019 00:24	Devon M Whooley	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19188002	07/07/2019 16:00	Anthony C Polaski	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-4B Grab Water

Project Name: Cortese Landfill Site

TestAmerica Sacramento
ELLE Sample #: WW 1093800
ELLE Group #: 2051766
Matrix: Water

Submittal Date/Time: 06/29/2019 09:40
Collection Date/Time: 06/25/2019 14:50
SDG#: TAC16-06

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 Version 1.1 Modified**		**ng/l**	**ng/l**	**ng/l**	
14473	6:2-Fluorotelomersulfonic acid[1]	27619-97-2	1.7 J	0.90	1.8	1
14473	8:2-Fluorotelomersulfonic acid[1]	39108-34-4	N.D.	1.8	5.4	1
14473	NEtFOSAA[1]	2991-50-6	N.D.	0.90	2.7	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMeFOSAA[1]	2355-31-9	N.D.	0.90	2.7	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	Perfluorobutanesulfonic acid[1]	375-73-5	0.35 J	0.27	0.90	1
14473	Perfluorobutanoic Acid[1]	375-22-4	N.D.	1.8	5.4	1
14473	Perfluorodecanesulfonic acid[1]	335-77-3	N.D.	0.54	1.8	1
14473	Perfluorodecanoic Acid[1]	335-76-2	N.D.	0.81	1.8	1
14473	Perfluorododecanoic Acid[1]	307-55-1	N.D.	0.45	1.8	1
14473	Perfluoroheptanesulfonic acid[1]	375-92-8	N.D.	0.36	1.8	1
14473	Perfluoroheptanoic Acid[1]	375-85-9	N.D.	0.36	0.90	1
14473	Perfluorohexanesulfonic acid[1]	355-46-4	N.D.	0.36	1.8	1
14473	Perfluorohexanoic Acid[1]	307-24-4	N.D.	0.36	1.8	1
14473	Perfluorononanoic Acid[1]	375-95-1	N.D.	0.36	1.8	1
14473	Perfluorooctanesulfonamide[1]	754-91-6	N.D.	0.45	2.7	1
14473	Perfluorooctanesulfonic acid[1]	1763-23-1	0.86 J	0.36	1.8	1
14473	Perfluorooctanoic Acid[1]	335-67-1	0.34 J	0.27	0.90	1
14473	Perfluoropentanoic Acid[1]	2706-90-3	N.D.	1.8	5.4	1
14473	Perfluorotetradecanoic Acid[1]	376-06-7	N.D.	0.27	0.90	1
14473	Perfluorotridecanoic Acid[1]	72629-94-8	N.D.	0.36	0.90	1
14473	Perfluoroundecanoic Acid[1]	2058-94-8	N.D.	0.36	1.8	1

The injection standard peak areas for 13C3-PFDA were outside of the QC acceptance limits in this sample. The recovery for extraction standards is within QC acceptance limits, therefore the data is reported.

Sample Comments

[1] = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	21 PFAS	EPA 537 Version 1.1 Modified	1	19188002	07/17/2019 00:33	Devon M Whooley	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19188002	07/07/2019 16:00	Anthony C Polaski	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW-5 Grab Water

Project Name: Cortese Landfill Site

TestAmerica Sacramento
ELLE Sample #: WW 1093801
ELLE Group #: 2051766
Matrix: Water

Submittal Date/Time: 06/29/2019 09:40
Collection Date/Time: 06/25/2019 10:50
SDG#: TAC16-07

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	**EPA 537 Version 1.1 Modified**		**ng/l**	**ng/l**	**ng/l**	
14473	6:2-Fluorotelomersulfonic acid[1]	27619-97-2	3.8	0.92	1.8	1
14473	8:2-Fluorotelomersulfonic acid[1]	39108-34-4	N.D.	1.8	5.5	1
14473	NEtFOSAA[1]	2991-50-6	N.D.	0.92	2.8	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMeFOSAA[1]	2355-31-9	N.D.	0.92	2.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	Perfluorobutanesulfonic acid[1]	375-73-5	1.4	0.28	0.92	1
14473	Perfluorobutanoic Acid[1]	375-22-4	2.0 J	1.8	5.5	1
14473	Perfluorodecanesulfonic acid[1]	335-77-3	N.D.	0.55	1.8	1
14473	Perfluorodecanoic Acid[1]	335-76-2	N.D.	0.83	1.8	1
14473	Perfluorododecanoic Acid[1]	307-55-1	N.D.	0.46	1.8	1
14473	Perfluoroheptanesulfonic acid[1]	375-92-8	N.D.	0.37	1.8	1
14473	Perfluoroheptanoic Acid[1]	375-85-9	1.1	0.37	0.92	1
14473	Perfluorohexanesulfonic acid[1]	355-46-4	0.91 J	0.37	1.8	1
14473	Perfluorohexanoic Acid[1]	307-24-4	1.9	0.37	1.8	1
14473	Perfluorononanoic Acid[1]	375-95-1	N.D.	0.37	1.8	1
14473	Perfluorooctanesulfonamide[1]	754-91-6	N.D.	0.46	2.8	1
14473	Perfluorooctanesulfonic acid[1]	1763-23-1	0.62 J	0.37	1.8	1
14473	Perfluorooctanoic Acid[1]	335-67-1	3.4	0.28	0.92	1
14473	Perfluoropentanoic Acid[1]	2706-90-3	N.D.	1.8	5.5	1
14473	Perfluorotetradecanoic Acid[1]	376-06-7	N.D.	0.28	0.92	1
14473	Perfluorotridecanoic Acid[1]	72629-94-8	N.D.	0.37	0.92	1
14473	Perfluoroundecanoic Acid[1]	2058-94-8	N.D.	0.37	1.8	1

Sample Comments

[1] = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	21 PFAS	EPA 537 Version 1.1 Modified	1	19188002	07/17/2019 00:42	Devon M Whooley	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19188002	07/07/2019 16:00	Anthony C Polaski	1

*=This limit was used in the evaluation of the final result

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Quality Control Summary

Client Name: TestAmerica Sacramento
Reported: 07/23/2019 11:15

Group Number: 2051766

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL**	LOQ
	ng/l	ng/l	ng/l
Batch number: 19188002	Sample number(s): 1093793-1093801		
6:2-Fluorotelomersulfonic acid	N.D.	1.0	2.0
8:2-Fluorotelomersulfonic acid	N.D.	2.0	6.0
NEtFOSAA	N.D.	1.0	3.0
NMeFOSAA	N.D.	1.0	3.0
Perfluorobutanesulfonic acid	N.D.	0.30	1.0
Perfluorobutanoic Acid	N.D.	2.0	6.0
Perfluorodecanesulfonic acid	N.D.	0.60	2.0
Perfluorodecanoic Acid	N.D.	0.90	2.0
Perfluorododecanoic Acid	N.D.	0.50	2.0
Perfluoroheptanesulfonic acid	N.D.	0.40	2.0
Perfluoroheptanoic Acid	N.D.	0.40	1.0
Perfluorohexanesulfonic acid	N.D.	0.40	2.0
Perfluorohexanoic Acid	N.D.	0.40	2.0
Perfluorononanoic Acid	N.D.	0.40	2.0
Perfluorooctanesulfonamide	N.D.	0.50	3.0
Perfluorooctanesulfonic acid	N.D.	0.40	2.0
Perfluorooctanoic Acid	N.D.	0.30	1.0
Perfluoropentanoic Acid	N.D.	2.0	6.0
Perfluorotetradecanoic Acid	N.D.	0.30	1.0
Perfluorotridecanoic Acid	N.D.	0.40	1.0
Perfluoroundecanoic Acid	N.D.	0.40	2.0

LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19188002	Sample number(s): 1093793-1093801								
6:2-Fluorotelomersulfonic acid	15.17	15.37			101		66-155		
8:2-Fluorotelomersulfonic acid	15.33	16.85			110		66-148		
NEtFOSAA	5.44	5.43			100		55-169		
NMeFOSAA	5.44	6.56			121		44-147		
Perfluorobutanesulfonic acid	4.81	5.26			109		73-128		
Perfluorobutanoic Acid	5.44	7.53			138		74-142		
Perfluorodecanesulfonic acid	5.24	6.14			117		60-135		
Perfluorodecanoic Acid	5.44	6.49			119		69-148		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: TestAmerica Sacramento
Reported: 07/23/2019 11:15

Group Number: 2051766

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Perfluorododecanoic Acid	5.44	5.85			107		75-136		
Perfluoroheptanesulfonic acid	5.18	5.45			105		64-135		
Perfluoroheptanoic Acid	5.44	5.66			104		76-140		
Perfluorohexanesulfonic acid	5.14	5.11			99		71-131		
Perfluorohexanoic Acid	5.44	5.97			110		75-135		
Perfluorononanoic Acid	5.44	6.03			111		72-148		
Perfluorooctanesulfonamide	5.44	4.70			86		65-164		
Perfluorooctanesulfonic acid	5.20	5.32			102		67-138		
Perfluorooctanoic Acid	5.44	6.17			113		72-138		
Perfluoropentanoic Acid	5.44	6.45			119		74-134		
Perfluorotetradecanoic Acid	5.44	5.90			108		74-135		
Perfluorotridecanoic Acid	5.44	6.31			116		61-145		
Perfluoroundecanoic Acid	5.44	5.39			99		75-146		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ng/l	MS Spike Added ng/l	MS Conc ng/l	MSD Spike Added ng/l	MSD Conc ng/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 19188002	Sample number(s): 1093793-1093801 UNSPK: 1093796									
6:2-Fluorotelomersulfonic acid	1.44	13.18	15.59	14.09	17.63	107	115	70-130	12	30
8:2-Fluorotelomersulfonic acid	N.D.	13.32	15.78	14.24	16.1	119	113	60-150	2	30
NEtFOSAA	N.D.	4.73	4.57	5.05	4.77	97	94	49-159	4	30
NMeFOSAA	N.D.	4.73	5.42	5.05	5.35	115	106	58-157	1	30
Perfluorobutanesulfonic acid	N.D.	4.18	4.99	4.47	5.25	119	117	73-134	5	30
Perfluorobutanoic Acid	N.D.	4.73	6.39	5.05	7.40	135	146	58-155	15	30
Perfluorodecanesulfonic acid	N.D.	4.55	5.40	4.87	5.25	119	108	41-148	3	30
Perfluorodecanoic Acid	N.D.	4.73	5.67	5.05	6.36	120	126	73-142	11	30
Perfluorododecanoic Acid	N.D.	4.73	4.98	5.05	6.00	105	119	76-136	19	30
Perfluoroheptanesulfonic acid	N.D.	4.50	5.34	4.81	6.28	119	131	50-145	16	30
Perfluoroheptanoic Acid	N.D.	4.73	5.71	5.05	6.06	121	120	67-137	6	30
Perfluorohexanesulfonic acid	N.D.	4.47	5.25	4.78	5.46	117	114	73-129	4	30
Perfluorohexanoic Acid	N.D.	4.73	5.65	5.05	5.79	120	115	70-130	2	30
Perfluorononanoic Acid	N.D.	4.73	5.64	5.05	5.88	119	116	70-130	4	30
Perfluorooctanesulfonamide	N.D.	4.73	3.83	5.05	4.54	81	90	70-130	17	30
Perfluorooctanesulfonic acid	N.D.	4.52	4.57	4.83	4.67	101	97	48-154	2	30
Perfluorooctanoic Acid	N.D.	4.73	5.49	5.05	6.15	116	122	48-160	11	30
Perfluoropentanoic Acid	N.D.	4.73	5.64	5.05	6.24	119	123	53-161	10	30
Perfluorotetradecanoic Acid	N.D.	4.73	5.64	5.05	5.96	119	118	78-133	6	30
Perfluorotridecanoic Acid	N.D.	4.73	4.65	5.05	5.28	98	105	57-151	13	30

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: TestAmerica Sacramento
Reported: 07/23/2019 11:15

Group Number: 2051766

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ng/l	MS Spike Added ng/l	MS Conc ng/l	MSD Spike Added ng/l	MSD Conc ng/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Perfluoroundecanoic Acid	N.D.	4.73	5.38	5.05	5.57	114	110	66-137	4	30

Labeled Isotope Quality Control

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: 21 PFAS
Batch number: 19188002

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C5-PFHxA	13C3-PFHxS	13C4-PFHpA
1093793	71	250*	441*	42	84	67
1093794	77	256*	523*	46	100	76
1093795	72	114	172*	46	70	61
1093796	72	91	91	66	67	68
1093797	73	93	91	69	71	73
1093798	72	89	88	70	64	70
1093799	73	75	64	66	63	72
1093800	74	95	97	63	62	71
1093801	72	94	89	68	64	66
Blank	78	74	70	80	78	80
LCS	82	75	74	78	82	88
MS	73	93	91	69	71	73
MSD	72	89	88	70	64	70
Limits:	33-123	31-157	26-148	35-138	34-126	35-126

	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA	13C2-8:2-FTS
1093793	217*	71	60	74	55	118
1093794	245*	78	71	80	61	133
1093795	141	73	72	93	65	94
1093796	91	80	70	75	66	75
1093797	85	76	72	70	67	78
1093798	76	72	73	77	69	86
1093799	91	73	70	94	75	95
1093800	103	74	71	93	77	102
1093801	79	73	70	79	64	85
Blank	87	86	79	88	82	94
LCS	104	82	82	92	79	91
MS	85	76	72	70	67	78
MSD	76	72	73	77	69	86

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Quality Control Summary

Client Name: TestAmerica Sacramento
Group Number: 2051766
Reported: 07/23/2019 11:15

Labeled Isotope Quality Control (continued)

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: 21 PFAS
Batch number: 19188002

Limits:	32-170	48-122	50-121	41-144	47-125	27-164
	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA	13C8-PFOSA
1093793	92	82	122	89	60	12
1093794	99	89	127	92	53	25
1093795	79	81	70	69	54	5*
1093796	64	67	66	60	35	61
1093797	70	76	76	81	61	56
1093798	71	80	77	77	54	65
1093799	66	83	84	49	64	63
1093800	71	78	72	65	60	42
1093801	66	70	79	68	52	60
Blank	75	74	79	72	71	76
LCS	77	77	83	76	77	72
MS	70	76	76	81	61	56
MSD	71	80	77	77	54	65
Limits:	30-127	30-128	30-142	39-130	26-119	11-127

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

01042/205766/1093793-80 01042/205766/1093793-801

yh1259 7/2/19 (6)

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: KWH and SLC	Lab PM: Giglia, Denise L	Carrier Tracking No(s):	COC No: 480-132144-29808.1
Client Contact: Keith Hollerbach	Phone: 908-451-5369	E-Mail: denise.giglia@testamericainc.com		Page: Page 1 of 1 Kwh
Company: Geosyntec Consultants, Inc.				Job #:
Address: 10211 Wincopin Circle 4'th Floor	Due Date Requested: — KWH	Analysis Requested		Preservation Codes:
City: Columbia	TAT Requested (days): STANDARD			A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)
State, Zip: MD, 21044				
Phone: 410-910-7610(Tel)	PO #: Purchase Order not required			Other:
Email: khollerbach@geosyntec.com	WO #: KWH			
Project Name: Cortese Landfill Site	Project #: 48002953			
Site: New York	SSOW#: — KWH			

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA - PFAS	8270D_SIM_MS_ID - 1,4-dioxane	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N		
EX-1	06/25/19	1830	G	Water	N	N	X			EDD's delivered as NYDEC Category B and MD Es Dat.
DUP20190625	06/25/19	—	G	Water	N	N	X			
MW-18B	06/26/19	1130	G	Water	N	N	X			
MW-3B	06/26/19	1250	G	Water	N	Y	X			
MW-3B MS	06/26/19	1250	G	Water	N	Y	X			
MW-3B MSD	06/26/19	1250	G	Water	N	Y	X			
EB-20190626	06/26/19	1800	G	Water	N	N	X			
MW-4B	06/27/19	1450	G	Water	N	N	X			
MW-5	06/28/19	1050	G	Water	N	N	X			
				Water						
				Water						

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

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

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by:	Date/Time: 6/28/19 14:00	Company Geosyntec	Received by:
Relinquished by:	Date/Time:	Company	Received by: yh1259 7/2/19 (3)
Relinquished by:	Date/Time:	Company	Received by: Date/Time: 6-29-19 09:40 Company ELLE

Custody Seals Intact: ☐ Yes ☐ No
Custody Seal No.: N/A
Cooler Temperature(s) °C and Other Remarks: 1c7

Ver: 01/16/2019

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 252888

Group Number(s): 2051766

Client: TESTAMERICA, BUFFALO

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	06/29/2019 9:40
Number of Packages:	1	Number of Projects:	1

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Jessenia Colon Martinez (30856) at 14:24 on 06/29/2019

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	32170023	1.7	IR	Wet	Y	Loose/Bag	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mL**	milliliter(s)
C	degrees Celsius	**MPN**	Most Probable Number
cfu	colony forming units	**N.D.**	non-detect
CP Units	cobalt-chloroplatinate units	**ng**	nanogram(s)
F	degrees Fahrenheit	**NTU**	nephelometric turbidity units
g	gram(s)	**pg/L**	picogram/liter
IU	International Units	**RL**	Reporting Limit
kg	kilogram(s)	**TNTC**	Too Numerous To Count
L	liter(s)	**µg**	microgram(s)
lb.	pound(s)	**µL**	microliter(s)
m3	cubic meter(s)	**umhos/cm**	micromhos/cm
meq	milliequivalents	**MCL**	Maximum Contamination Limit
mg	milligram(s)		

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
P^	Concentration difference between the primary and confirmation column > 40%. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: KWH and SLC	Lab PM: Giglia, Denise L	Carrier Tracking No(s):	COC No: 480-132144-29808.1
Client Contact: Keith Hollerbach	Phone: 908-451-5369	E-Mail: denise.giglia@testamericainc.com		Page: Page 1 of 1 KWH
Company: Geosyntec Consultants, Inc.				Job #:
Address: 10211 Wincopin Circle 4'th Floor	Due Date Requested:			
City: Columbia	TAT Requested (days): STANDARD			
State, Zip: MD, 21044				
Phone: 410-910-7610(Tel)	PO #: Purchase Order not required			
Email: khollerbach@geosyntec.com	WO #: KWH			
Project Name: Cortese Landfill Site	Project #: 48002953			
Site: New York	SSOW#: KWH			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone

480-155634 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_TBA - PFAS	8270D_SIM_MS_ID - 1,4-dioxane	Tot	Special Instructions/Note:
			Preservation Code:				N	N		
EX-1	06/25/19	1830	G	Water	N	N		X		EDD's delivered as NYSDEC Category B and MD EsDat
DUP20190625	06/25/19	—	G	Water	N	N		X		
MW-18B	06/26/19	1130	G	Water	N	N		X		
MW-3B	06/26/19	1250	G	Water	N	N		X		
MW-3B MS	06/26/19	1250	G	Water	N	N		X		
MW-3B MSD	06/26/19	1250	G	Water	N	N		X		
EB-20190626	06/26/19	1800	G	Water	N	N		X		2 COOLERS SHIPPED
MW-4B	06/27/19	1450	G	Water	N	N		X		
MW-5	06/28/19	1050	G	Water	N	N		X		
				Water						
				Water						

KWH

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

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

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	6/28/19 1400	Geosyntec	[signature]	6/29/19 0900	TAS
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: #1 3.6

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc. Job Number: 480-155634-1

Login Number: 155634 **List Source: Eurofins TestAmerica, Buffalo**
List Number: 1
Creator: Hulbert, Michael J

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	GEOSYNTEC CONSULTANTS
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	True	

ATTACHMENT B
DATA USABILITY SUMMARY REPORT

SUMMARY OF THE ANALYTICAL DATA USABILITY
Cortese Landfill Site, Narrowsburg, New York

Water 1,4-Dioxane Analyses
Samples Collected: June 25-28, 2019
Samples Received: June 29, 2019
Sample Delivery Groups: Eurofins TestAmerica Work Order Number 480-155634-1
Laboratory Reference Numbers:

480-155634-1	EX-1
480-155634-2	DUP20190625
480-155634-3	MW-18B
480-155634-4	MW-3B
480-155634-4 MS	MW-3B MS
480-155634-4 MSD	MW-3B MSD
480-155634-5	EB-20190626
480-155634-6	MW-4B
480-155634-7	MW-5

The samples were validated for the analyses of 1,4-dioxane, based on the information and/or guidance provided in the following:

- United States (US) Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002);
- Emerging Contaminant Assessment (ECA) Plan (the Plan) for the Cortese Landfill Site (the Site) (NYSDEC Site No. 353001) located in Narrowsburg, New York, 11/30/18;
- US EPA Region 2 Standard Operating Procedure (SOP) Number HW-35A, Revision 0, Semivolatile Data Validation, June 2015;
- EPA Methods 3510C/8270D using Selected Ion Monitoring (SIM); and
- Professional and technical judgment.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine the impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Instrument Performance Check
✓ Initial Calibration
✓ Continuing Calibration Verification
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Equipment Blank
✓ Field Duplicate
✓ Isotope Dilution Standard
✓ Sensitivity
✓ Electronic Data Deliverable Review.

Data Validation Summary/Overall Assessment

Based on this Stage 2B data validation covering the quality control (QC) parameters listed above and the information provided, the data are usable for supporting project objectives.

There was no time of collection documented on the chain of custody (COC) for the field duplicate sample. The laboratory assigned a collection time of 00:00.

Holding Times

The water samples were extracted within 7 days of collection and analyzed within 40 days of extraction.

Instrument Performance Check

An instrument performance check sample (tune standard) was analyzed at the beginning of each 12-hour period during sample analysis. The samples were analyzed within the 12-hour period. The ion abundance criteria for both methods were met.

Initial Calibration

An appropriate initial calibration was performed for 1,4-dioxane. The laboratory calculated percent relative standard deviation (%RSD) of the relative response factors (RRFs). The average RRF and the %RSD of 1,4-dioxane were within the method and validation specified acceptance criteria. The average RRF met the method and validation specified acceptance criteria.

Continuing Calibration Verification (CCV)

CCVs were performed at the required frequency. The CCV RRFs met the method and validation specified acceptance criteria. The percent difference or percent drifts (%Ds) between the RRFs in the initial calibration and the CCVs were within the method and validation specified acceptance criteria.

Method Blank

1,4-Dioxane was not detected in the method blank above the method detection limit (MDL).

Matrix Spike/ Matrix Spike Duplicate (MS/MSD)

Sample MW-3B was used for the MS/MSD pair. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

Laboratory Control Sample (LCS)

The LCS recovery result was within the laboratory specified acceptance criteria.

Equipment Blank

One equipment blank was collected with the sample set. 1,4-Dioxane was not detected in the equipment blank above the MDL.

Field Duplicate

A field duplicate was collected with the sample set, DUP20190625. Acceptable precision (RPD <30%) was demonstrated between the field duplicate and the original sample, EX-1.

Isotope Dilution Standard

The isotope dilution standard recoveries were within the laboratory specified acceptance criteria.

Sensitivity

The samples were reported to the MDL. No elevated nondetect results were reported.

The 1,4-dioxane concentrations in samples MW-5, EX-1, DUP20190625 and MW-18B were flagged by the laboratory with E, which indicates the concentration exceeded the calibration range. Additional information from the laboratory in the report narrative indicated that the raw data (on-column) amounts of 1,4-dioxane in these four samples were within the calibration range. Due to the isotope dilution standard recovery results in these samples, which are used to correct the raw data concentrations, the final sample concentrations exceeded the calibration range. Based on professional and technical judgment, no qualifications were applied to the data in these four samples.

The performance standard, MDL and reporting limit (RL) listed in the ECA were met.

Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDDs were reviewed against the information provided by the associated level IV reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level IV report and the EDD.

SUMMARY OF THE ANALYTICAL DATA USABILITY
Cortese Landfill Site, Narrowsburg, New York

Water Per- and Polyfluroalkyl Substances (PFAS) Analyses
Samples Collected: June 25-29, 2019
Samples Received: June 29, 2019
Sample Delivery Group: TAC16
Laboratory Reference Numbers:

1093793	EX-1
1093794	DUP20190625
1093795	MW-18B
1093796	MW-3B
1093797	MW-3B MS
1093798	MW-3B MSD
1093799	EB-20190626
1093800	MW-4B
1093801	MW-5

The samples were validated for the analyses of PFAS based on the information and/or guidance provided in the following:

- United States (US) Environmental Protection Agency (EPA) Contract Laboratory Program National Functional Guidelines for High Resolution Superfund Organic Methods Data Review, April 2016 (USEPA-542-B-2016-001);
- Emerging Contaminant Assessment (ECA) Plan (the Plan) for the Cortese Landfill Site (the Site) (NYSDEC Site No. 353001) located in Narrowsburg, New York, 11/30/18;
- US EPA Region 2 Standard Operating Procedure (SOP) Number HW-19, Revision 1.1, Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS) Data Validation, December 2010;
- USEPA Modified Method 537, Version 1.1; and
- Professional and technical judgment.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine the impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Time
✓ Instrument Performance Check
✓ Initial Calibration
✓ Continuing Calibration Verification
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Equipment Blank
✓ Field Duplicate
⊗ Isotope Dilution Standard
✓ Sensitivity

✓ Electronic Data Deliverable Review.

Data Validation Summary/Overall Assessment

Based on this Stage 2A data validation covering the quality control (QC) parameters listed above and the information provided, the data as qualified are usable for supporting project objectives, with the following exception. Based on professional and technical judgment and 13C8-PFOSA recovery less than 10%, the non-detect perfluorooctanesulfonamide (PFOSA) result in sample MW-18B was R qualified as rejected. The remaining qualified data that were not rejected should be used within the limitations of the qualifications.

There was no time of collection documented on the chain of custody (COC) for the field duplicate sample. The laboratory assigned a collection time of 00:00.

Holding Times

The water samples for PFAS analyses were extracted within 14 days of collection and analyzed within 28 days of extraction.

Initial Calibration

Appropriate initial calibrations were performed for the PFAS. The laboratory calculated %RSDs of the RRFs. The average RRFs and the %RSD of the PFAS were within the laboratory specified acceptance criteria. The laboratory recalculated the standard concentrations using the initial calibration; the concentrations were within the laboratory and method specified acceptance criteria.

Continuing Calibration Verification (CCV)

CCVs were performed at the required frequency. The CCV RRFs met the laboratory specified acceptance criteria. The percent difference or percent drifts (%Ds) between the RRFs in the initial calibration and the CCVs were within the laboratory specified acceptance criteria.

Method Blank

The PFAS were not detected in the method blank above the MDLs.

Matrix Spike/ Matrix Spike Duplicate

Sample MW-3B was used for the MS/MSD pair. The recovery and RPD results were within the laboratory specified acceptance criteria.

Laboratory Control Sample

LCSs were reported. The recovery results were within the laboratory and QAPP specified acceptance criteria.

Equipment Blank

One equipment blank was collected with the sample set. The PFAS were not detected in the equipment blank above the MDLs.

Field Duplicate

A field duplicate was collected with the sample set, DUP20190625. Acceptable precision (RPD <30%) was demonstrated between the field duplicate and the original sample, EX-1.

Isotope Dilution Standard

The isotope dilution standard recoveries were within the laboratory specified acceptance criteria, with the following exceptions.

Sample ID	Isotope Dilution Compound	Result (%)	Lower Control Limit (%)	Upper Control Limit (%)
EX-1	13C8-PFOSA	12*	11	127
EX-1	13C5-PFPeA	250	31	157
EX-1	13C3-PFBS	441	26	148
EX-1	13C5-PFHxA	42*	35	138
EX-1	13C2-6:2-FTS	217	32	170
DUP-20190625	13C8-PFOSA	25*	11	127
DUP-20190625	13C5-PFPeA	256	31	157
DUP-20190625	13C3-PFBS	523	26	148
DUP-20190625	13C5-PFHxA	46*	35	138
DUP-20190625	13C2-6:2-FTS	245	32	170
MW-18B	13C8-PFOSA	5	11	127
MW-18B	13C3-PFBS	172	26	148
MW-18B	13C5-PFHxA	46*	35	138
MW-3B	13C2-PFTeDA	35*	26	119
EB-20190626	13C2-PFDoDA	49*	39	130
MW-4B	13C8-PFOSA	42*	11	127

%-percent
*- recovery was within the laboratory specified acceptance criteria, but low and outside the method specified criteria of 50-150% recovery

As noted by the *-flagged data in the table above, eight of the isotope dilution standard recoveries were within the laboratory specified acceptance criteria, but low and outside the method specified acceptance criteria of 50-150% recovery. Based on professional and technical judgment, no qualifications were applied to the data associated with recoveries less than 50% and greater than or equal to 25%. However, based on professional and technical judgment, the non-detect PFOSA result in sample EX-1 was UJ qualified as estimated less than the MDL due to 12% recovery of 13C8-PFOSA and the non-detect PFOSA result in sample MW-18B was R qualified as rejected, due to 13C8-PFOSA recovery less than 10%.

Due to high isotope dilution standard recoveries, outside both the method and laboratory specified acceptance criteria, the concentrations of perfluoropentanoic acid (PFPeA) in

samples EX-1 and DUP20190625 were J+ qualified as estimated with high biases and the concentrations of perfluorobutanesulfonic acid (PFBS) in samples MW-18B, EX-1 and DUP20190625 were J+ qualified as estimated with high biases. No qualifications were applied to the 6:2-fluorotelomersulfonic acid data since this compound was not detected in samples EX-1 and DUP-20190625.

Sample	Analyte	Laboratory Result (ng/L)	Laboratory Flag	Validation Result (ng/L)	Validation Qualifier*	Reason Code**
EX-1	Perfluorobutane-sulfonic acid	1.7	NA	1.7	J+	11
EX-1	Perfluoropentanoic Acid	22	NA	22	J+	11
EX-1	Perfluorooctane-sulfonamide	0.44	U	0.44	UJ	11
DUP-20190625	Perfluorobutane-sulfonic acid	1.8	NA	1.8	J+	11
DUP-20190625	Perfluoropentanoic Acid	26	NA	26	J+	11
MW-18B	Perfluorobutane-sulfonic acid	3.4	NA	3.4	J+	11
MW-18B	Perfluorooctane-sulfonamide	0.44	U	0.44	R	11

ng/L-nanograms per liter
U-analyte was not detected at the value indicated
NA-not applicable
* Validation qualifiers are defined in Attachment 1 at the end of this report
**Reason codes are defined in Attachment 2 at the end of this report

Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported. The performance standards, MDLs and RLs listed in the ECA were met.

Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level IV report and the EDD.

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS
AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery or RPD outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Laboratory duplicate RPD exceeded
13	Other

RPD-relative percent difference