Sterling Environmental Engineering, P.C.

September 29, 2020

Mr. Payson Long Via Email (payson.long@dec.ny.gov)
Division of Environmental Remediation, Remedial Bureau E, Section D
NYS Department of Environmental Conservation
625 Broadway, 11th Floor
Albany, New York 12233-7020

Subject: 2020 Annual Post-Closure Monitoring Event Notification
Town of Ramapo Landfill
STERLING File #20010 (Task 200)

Dear Mr. Long,

Sterling Environmental Engineering, P.C. (STERLING) will conduct the 2020 annual Post-Closure Monitoring (PCM) event at the Town of Ramapo Landfill (Landfill) on or about the week of October 5, 2020, weather permitting. The attached Tables are provided indicating the wells to be sampled.

Groundwater monitoring will be conducted in accordance with the approved PCM Program. Monitoring wells UP-OS, UP-I, UP-R, 1-OS, 2-OS, 3-OS/I, 4-OS, 7-OS, 8-OS, 8-I, 8-R, 10-OS, 10-I, and 10-R will be sampled, as well as the following drinking water supply wells and sentinel wells (private water supply wells):

- Suez NA Public Water Supply (PWS) Well Nos. SVWC-93, 94, 95, and 96;
- Torne Brook Farm: PW-1 and monitoring well cluster 9 (9-OS, 9-I, and 9-R); and
- Lehrmann property (formerly Digianni property): PW-2.

Sampling locations are listed in Table 1. All samples will be analyzed for the parameters provided in Table 2. In addition, select groundwater samples (UP-OS, UP-I, UP-R, 9-OS, 9-I, 9-R, 10-OS, 10-I, 10-R, SVWC-94, and SVWC-95) will also be analyzed for additional emerging contaminants (per- and polyfluoroalkyl substances (PFAS) & 1,4-Dioxane), in accordance with guidance, protocols, and requirements provided in Attachment 1. Laboratory analyses will be performed by Alpha Analytical, Mansfield, Massachusetts, a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory and will be performed according to the NYSDEC Analytical Services Protocol (ASP).

Depth to water will be measured at the well locations listed in Table 3. STERLING will conduct air quality monitoring for this event, which will consist of measuring percent lower explosive limit (%LEL), hydrogen sulfide, and volatile organic compounds (VOC) concentrations for each of the locations presented on Table 4.

STERLING will also complete the following tasks:

- Inspect Institutional Controls (IC) and Engineering Controls (EC) for the Landfill and complete an inspection form.
- Complete a site inspection checklist during the monitoring event.
- Obtain analytical results for samples collected for Landfill leachate discharged to the West Ramapo Wastewater Treatment Plant.
- Obtain flow rates and periods of operation/non-operation for the groundwater/leachate extraction wells located on the downgradient side of the Landfill.

All information listed above will be included in the 2020 Periodic Review Report. Please contact me should you have any questions or comments.

Very truly yours,

STERLING ENVIRONMENTAL ENGINEERING, P.C.

Mark A. Williams
Senior Environmental Professional
mark.williams@sterlingenvironmental.com

MAW/bc
Email
Attachments

cc: Ted Dzurinko, Town of Ramapo
Paul Gdanski, P.E., Town of Ramapo
George Jacob, USEPA
Anthony Perretta, NYSDOH
Jon France, Torne Brook Farm (First Class Mail Only)
Levy and Stacey Lehrmann, 20 Torne Brook Road (First Class Mail Only)
Arlene Lapidos, Ramapo Land Co., Inc.
William Prehoda, Suez NA

S:\Sterling\Projects\2000 Projects\Town of Ramapo - 20010\Correspondence\2020\2020_9-29_Annual PCM Notification Letter.docxc

ATTACHMENTS

TABLE 1

Groundwater Monitoring Schedule
Town of Ramapo Landfill
Hillburn, New York

Monitoring Location	Analytical Schedule [1] (Every 5th Quarter)
SVWC-93	Schedule A
SVWC-94	Schedule A
SVWC-95	Schedule A
SVWC-96	Schedule A
PW-1	Schedule A
PW-2	Schedule A
1-OS	Schedule A
1-R	--- [2]
2-OS	Schedule A
2-I	--- [2]
2-R	--- [2]
3-OS/I	Schedule A
3-R	--- [2]
4-OS	Schedule A
4-I	--- [2]
4-R	--- [2]
5-OS*	--- [2]
5-I*	--- [2]
5-R*	--- [2]
6-I	--- [2]
6-R	--- [2]
7-OS	Schedule A
7-I	--- [2]
7-R	--- [2]
8-OS	Schedule A
8-I	Schedule A
8-R	Schedule A
9-OS	Schedule A
9-I	Schedule A
9-R	Schedule A
10-OS	Schedule A
10-I	Schedule A
10-R	Schedule A
UP-OS*	Schedule A
UP-I*	Schedule A
UP-R*	Schedule A

[1] Refer to Table 2.

[2] Static water level only.

* = Upgradient monitoring location.

OS = Overburden/shallow well.

I = Intermediate well.

R = Bedrock well.

Note: Revised in accordance with the NYSDEC's October 27, 2003 post-closure monitoring variance approval

TABLE 2

Town of Ramapo Landfill
Analytical Schedule and Method References

Schedule A - Field and Baseline Parameters

Parameter	Document/Method No.	Reference
Specific Conductance	120.1	1.
Temperature	170.0	1.
Static Water Level	---	---
Floaters or Sinkers	---	---
pH	150.1	1.
Eh	D1498	2.
Field Observations	---	---
TKN	351.3	1.
COD	410.1	1.
Alkalinity	310.1	1.
Hardness as $CaCO_3$	130.1	1.
Site Related VOCs:		
1,1-Dichloroethane	601	1.
Vinyl Chloride	601	1.
Benzene	602	1.
Chlorobenzene	602	1.
TAL Metals	NYSDEC ASP	1.

References:

1. New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP), 9/89, 12/91 Revisions.
2. American Society of Testing Materials, ASTM, 1989.

--- Parameters to be addressed by Field Personnel

Note: Revised in accordance with the NYSDEC's October 27, 2003 post-closure monitoring variance approval.

Table 3
Town of Ramapo Landfill
Monitoring Point Elevations and Total Depth Measurement

Monitoring Well	Top of MP Elevation (feet)	Total Depth[(1)] (feet)
1 O/S	379.21	26.65
1 R	**379.59**	**57.00**
2 O/S	422.74	24.52
2 I	422.29	29.35
2 R	**422.01**	**51.92**
3 OS/I	345.77	15.85
3 R	**345.51**	**38.54**
4 O/S	452.42	15.25
4 R	**452.84**	**24.60**
5 O/S	584.87	18.89
5 I	584.62	41.96
5 R	**584.75**	**61.97**
6 I	464.00	32.46
6 R	**462.75**	**50.60**
7 O/S	310.59	18.85
7-I	309.46	---
7 R	**310.81**	**72.70**
8 O/S	320.21	22.68
8 R	**320.52**	**67.10**
9 O/S	308.00	16.01
9-I	309.42	41.31
9 R	**307.35**	**61.11**
10-OS	332.02	20.71
10-I	331.39	30.09
10-R	**330.74**	**57.00**
UP-OS	538.89	20.00
UP-I	537.13	35.00
UP-R	**535.59**	**111.90**

[(1)] Measured from top of riser casing.
NA = Not Available

TABLE 4

Air Monitoring Plan
Town of Ramapo Landfill
Hillburn, New York

Monitoring Location	LEL	Hydrogen Sulfide	PID	Sampling Location
SVWC-93	*	*	*	Inside well riser
SVWC-94	*	*	*	Inside well riser
SVWC-95	*	*	*	Inside well riser
SVWC-96	*	*	*	Inside well riser
PW-1	*	*	*	Inside well riser
PW-2	*	*	*	Inside well riser
1-OS	*	*	*	Inside well riser
1-R	*	*	*	Inside well riser
2-OS	*	*	*	Inside well riser
2-I	*	*	*	Inside well riser
2-R	*	*	*	Inside well riser
3-OS/I	*	*	*	Inside well riser
3-R	*	*	*	Inside well riser
4-OS	*	*	*	Inside well riser
4-I	*	*	*	Inside well riser
4-R	*	*	*	Inside well riser
5-OS	*	*	*	Inside well riser
5-I	*	*	*	Inside well riser
5-R	*	*	*	Inside well riser
6-I	*	*	*	Inside well riser
6-R	*	*	*	Inside well riser
7-OS	*	*	*	Inside well riser
7-I	*	*	*	Inside well riser
7-R	*	*	*	Inside well riser
8-OS	*	*	*	Inside well riser
8-I	*	*	*	Inside well riser
8-R	*	*	*	Inside well riser
9-OS	*	*	*	Inside well riser
9-I	*	*	*	Inside well riser
9-R	*	*	*	Inside well riser
10-OS	*	*	*	Inside well riser
10-I	*	*	*	Inside well riser
10-R	*	*	*	Inside well riser
UP-OS	*	*	*	Inside well riser
UP-I	*	*	*	Inside well riser
UP-R	*	*	*	Inside well riser
RVWF-1	*	*	*	Inside well riser
Baler Building	*	*	*	Waist high
Manhole A-5	*	*	*	Inside manhole
Lift Station A-10	*	*	*	Inside lift station
Lift Station W-20	*	*	*	Inside lift Station
Landfill Perimeter	*	*	*	Waist high
Landfill Gas Vents	*	*	*	Inside Each Vent

* = Monitoring or sampling point.
OS = Overburden/shallow well.
I = Intermediate well.
R = Bedrock well.

Note: Revised in accordance with the NYSDEC's October 27, 2003 post-closure monitoring variance approval.

ATTACHMENT 1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau E
625 Broadway, 12th Floor, Albany, NY 12233-7017
P: (518) 402-9813 I F: (518) 402-9819
www.dec.ny.gov

June 12, 2019

Edward P. Dzurinko
Director Of Public Works
Town of Ramapo, Department of Public Works
16 Pioneer Avenue
P.O. Box 446
Tallman, NY 10982

RE: Request for sampling of Emerging Contaminants
Site Name: Ramapo Town Landfill
Site No.: 344004
Site Address: Torne Valley Road
Ramapo, Rockland County, NY 10901

Dear Edward P. Dzurinko:

The New York State Department of Environmental Conservation (DEC) is undertaking a Statewide evaluation of remediation sites to better understand the risk posed to New Yorkers by 1,4-Dioxane and per- and polyfluoroalkyl substances (PFASs). PFASs have historically not been evaluated at remediation sites, and 1,4-Dioxane has not been evaluated at the levels that are now thought to represent a health concern.

This initiative is being undertaken as a result of these "emerging contaminants" having been found in a number of drinking water supplies in New York. Accordingly, the DEC is requiring that you test site groundwater for these chemicals. 1,4-Dioxane and PFASs are appropriately investigated as part of the implementation of a complete remedial program in accordance with the requirements of DER-10 Technical Guidance for Site Investigation and Remediation (DER-10) due to regulation by the DEC of hazardous wastes under Environmental Conservation Law (ECL) Article 27, Title 13. To accommodate this requirement, a select number of existing monitoring wells, representative of the potential of the above-referenced site to be a source of these emerging contaminants, must be sampled. DEC recommends that at least one of these wells should be upgradient of the site.

The attached guidance provides information on the analytical methods and reporting requirements. A second guidance document describes special precautions that need to be considered when sampling for PFASs.

Please prepare a draft letter work plan that identifies the wells proposed for sampling, brief description of the sampling methods, and anticipated sampling date

within the next 60 days. If you wish to discuss the scope of the required water testing, please contact me at 518-402-9813 or robert.strang@dec.ny.gov.

Sincerely,

Robert Strang

Robert Strang, E.I.T.
Project Manager
Remedial Bureau E
Division of Environmental Remediation

Enclosures

ec: Anthony Perretta, DOH
Rosalie Rusinko, OGC
Jeffrey Dyber, DER
George Jacob, EPA
DecDocs

Issue: NYSDEC has committed to analyzing representative groundwater samples at remediation sites for emerging contaminants (1,4-dioxane and PFAS) as described in the below guidance.

Implementation

NYSDEC project managers will be contacting site owners to schedule sampling for these chemicals. Only groundwater sampling is required. The number of samples required will be similar to the number of samples where "full TAL/TCL sampling" would typically be required in a remedial investigation. If sampling is not feasible (e.g., the site no longer has any monitoring wells in place), sampling may be waived on a site-specific basis after first considering potential sources of these chemicals and whether there are water supplies nearby.

Upon a new site being brought into any program (i.e., SSF, BCP), PFAS and 1,4-dioxane will be incorporated into the investigation of groundwater as part of the standard "full TAL/TCL" sampling. Until an SCO is established for PFAS, soil samples do not need to be analyzed for PFAS unless groundwater contamination is detected. Separate guidance will be developed to address sites where emerging contaminants are found in the groundwater. The analysis currently performed for SVOCs in soil is adequate for evaluation of 1,4-dioxane, which already has an established SCO.

Analysis and Reporting

Labs should provide a full category B deliverable, and a DUSR should be prepared by an independent 3rd party data validator. QA/QC samples should be collected as required in DER-10, Section 2.3(c). The electronic data submission should meet the requirements provided at: https://www.dec.ny.gov/chemical/62440.html ,

The work plan should explicitly describe analysis and reporting requirements.

PFAS sample analysis: Currently, ELAP does not offer certification for PFAS compounds in matrices other than finished drinking water. However, laboratories analyzing environmental samples (ex. soil, sediments, and groundwater) are required, by DER, to hold ELAP certification for PFOA and PFOS in drinking water by EPA Method 537 or ISO 25101.

Modified EPA Method 537 is the preferred method to use for groundwater samples due to the ability to achieve 2 ng/L (ppt) reporting limits. If contract labs or work plans submitted by responsible parties indicate that they are not able to achieve similar reporting limits, the project manager should discuss this with a DER chemist. Note: Reporting limits for PFOA and PFOS should not exceed 2 ng/L.

PFAS sample reporting: DER has developed a PFAS target analyte list (below) with the intent of achieving reporting consistency between labs for commonly reportable analytes. It is expected that reported results for PFAS will include, at a minimum, all the compounds listed. This list may be updated in the future as new information is learned and as labs develop new capabilities. If lab and/or matrix specific issues are encountered for any particular compounds, the NYSDEC project manager will make case-by-case decisions as to whether particular analytes may be temporarily or permanently discontinued from analysis for each site. Any technical lab issues should be brought to the attention of a NYSDEC chemist.

Some sampling using this full PFAS target analyte list is needed to understand the nature of contamination. It may also be critical to differentiate PFAS compounds associated with a site from other sources of these chemicals. Like routine refinements to parameter lists based on investigative findings, the full PFAS target analyte list may not be needed for all sampling intended to define the extent of contamination. Project managers may approve a shorter analyte list (e.g., just the UCMR3 list) for some reporting on a case by case basis.

1,4-Dioxane Analysis and Reporting: The method detection limit (MDL) for 1,4-dioxane should be no higher than 0.35 µg/l (ppb). Although ELAP offers certification for both EPA Method 8260 SIM and EPA Method 8270 SIM, DER is advising the use of method 8270 SIM. EPA Method 8270 SIM provides a more robust extraction procedure, uses a larger sample volume, and is less vulnerable to interference from chlorinated solvents.

Full PFAS Target Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonates	**Perfluorobutanesulfonic acid**	**PFBS**	**375-73-5**
	Perfluorohexanesulfonic acid	**PFHxS**	**355-46-4**
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanessulfonic acid	**PFOS**	**1763-23-1**
	Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluoroalkyl carboxylates	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	**PFHpA**	**375-85-9**
	Perfluorooctanoic acid	**PFOA**	**335-67-1**
	Perfluorononanoic acid	**PFNA**	**375-95-1**
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUA/PFUdA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTriA/PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTA/PFTeDA	376-06-7
Fluorinated Telomer Sulfonates	6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2
	8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4
Perfluorooctane-sulfonamides	Perfluroroctanesulfonamide	FOSA	754-91-6
Perfluorooctane-sulfonamidoacetic acids	N-methyl perfluorooctanesulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethyl perfluorooctanesulfonamidoacetic acid	N-EtFOSAA	2991-50-6

Bold entries depict the 6 original UCMR3 chemicals

Collection of Groundwater Samples for Per- and Polyfluoroalkyl Substances (PFAS) from Monitoring Wells Sample Protocol

Samples collected using this protocol are intended to be analyzed for perfluorooctanoic acid (PFOA) and other perfluorinated compounds by Modified (Low Level) Test Method 537.

The sampling procedure used must be consistent with the NYSDEC March 1991 Sampling Guidelines and Protocols http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf with the following materials limitations.

At this time acceptable materials for sampling include: stainless steel, high density polyethylene (HDPE) and polypropylene. Additional materials may be acceptable if proven not to contain PFAS. **NOTE: Grunfos pumps and some bladder pumps are known to contain PFAS materials (e.g. Teflon™ washers for Grunfos pumps and LDPE bladders for bladder pumps).** All sampling equipment components and sample containers should not come in contact with aluminum foil, low density polyethylene (LDPE), glass or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer. Standard two step decontamination using detergent and clean water rinse will be performed for equipment that does come in contact with PFAS materials. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials must be avoided. Many food and drink packaging materials and "plumbers thread seal tape" contain PFAS.

All clothing worn by sampling personnel must have been laundered multiple times. The sampler must wear nitrile gloves while filling and sealing the sample bottles.

Pre-cleaned sample bottles with closures, coolers, ice, sample labels and a chain of custody form will be provided by the laboratory.

1. Fill two pre-cleaned 250 mL HDPE or polypropylene bottle with the sample.
2. Cap the bottles with an acceptable cap and liner closure system.
3. Label the sample bottles.
4. Fill out the chain of custody.
5. Place in a cooler maintained at 4 ± 2° Celsius.

Collect one equipment blank for every sample batch, not to exceed 20 samples.

Collect one field duplicate for every sample batch, not to exceed 20 samples.

Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, not to exceed 20 samples.

Request appropriate data deliverable (Category A or B) and an electronic data deliverable.