ARCADIS Design & Consultancy for natural and built assets

Payson Long
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Subject:
September 2017 Monthly Report
Site Management/RSO
Fort Edward Landfill
NYSDEC Site No. 558001
Contract No. D007618-39

Date:
November 22, 2017

Contact:
Andy Vitolins

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518.250.7300

Email:
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Our ref:
00266434.0000

Dear Mr. Long:

Arcadis CE, Inc. (Arcadis) has prepared this letter report to summarize the leachate collection and treatment system operation, maintenance, and monitoring (OM&M) activities completed during the September 2017 reporting period.

Leachate Collection and Treatment System Operation and Maintenance

The leachate collection system operated with no downtime during the September 2017 operating period. A total of 458,025 gallons of leachate were collected and treated through the system during September 2017. The corresponding average leachate recovery rate for the month was approximately 10.6 gallons per minute (gpm).

The following O&M activities were completed during the September 2017 operating period:

- Iron and solids sludge processing was performed throughout the month. In total, three 55-gallon drums of sludge were generated during September 2017.
- Brush cutting was performed in select areas of the landfill cap swales and treatment cells.

System Sampling

The monthly samples were collected on September 25, 2017 from the following locations:

- Treatment System Influent (i.e. combined flow from extraction wells EW-1, EW-2, EW-3, and EW-4);
- Clarifier Catch Tank discharge;
- Cell 3 (i.e. treatment cell discharge into the Cell 2/3 bypass pipe);
- Cell 2 (i.e. treatment cell discharge into the effluent collection chamber); and
- Polishing Pond Effluent.

Extraction wells EW-1, EW-2, EW-3, and EW-4 were not sampled this month as they were sampled in July 2017 as part of the annual monitoring event. The extraction wells will be sampled again in the fourth quarter 2017.

The monthly routine samples were submitted to Con-Test Analytical for analysis of volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), metals, total dissolved solids (TDS), and total suspended solids (TSS).

The analytical results are discussed in the sections below and have been summarized in Table 1. The laboratory analytical data will be submitted to NYSDEC's EIMS Administrator in the required EQuIS EDD format.

Analytical Results

VOCs

As shown in Table 1, VOCs were detected in samples from the Influent, Clarifier Catch Tank discharge, Cell 3 bypass, and Cell 2 effluent at concentrations that exceeded the NYSDEC Class GA Groundwater Standards. The sample from combined influent to the treatment system (Influent) contained cis-1,2-dichloroethene (cDCE) (21 micrograms per liter [µg/L]) and vinyl chloride (19 µg/L). These compounds were also present in the treatment plant discharge (Clarifier Catch). As shown in Table 1, the Clarifier Catch sample concentrations of cDCE and vinyl chloride were 20 µg/L and 15 µg/L, respectively. The Cell 3 bypass and Cell 2 effluent sample concentrations of cDCE were 9.2 µg/L and 6.7 µg/L, respectively. As shown in Table 1, no VOCs were detected at concentrations greater than the respective quantitation limits in the Effluent sample from the Polishing Pond.

PCBs

PCB-1232 was the only PCB Aroclor detected in the samples collected from Influent, Clarifier Catch Tank, and Cell 3 bypass at concentrations greater than the NYSDEC Class GA Groundwater Standard. PCBs were not detected in the effluent collection chamber samples at Cell 2 or the Polishing Pond Effluent sample during the September 2017 sampling event (Table 1). During monthly sampling events since July 2016, PCB Aroclor 1016, 1221, or 1242 have generally been detected in the Influent or Clarifier Catch Tank samples.

Metals

Iron and manganese were detected at all the sample locations at concentrations greater than the corresponding NYSDEC Class GA Groundwater Standard and Effluent Limitation of 0.3 mg/L and 0.6 mg/L, respectively. The highest concentration of iron and manganese was detected in the sample from the Influent at 17 mg/L and 1.8 mg/L, respectively. As shown in Table 1, the Effluent samples also contained iron and manganese concentrations (4.2 mg/L and 2.4 mg/L, respectively) above the respective NYSDEC Class GA Groundwater Standard and/or Effluent Limitations.

TDS and TSS

The concentrations of TDS and TSS continue to fluctuate between sampling events. During the September sampling event, TDS concentrations ranged between 380 mg/L and 490 mg/L; TSS concentrations ranged from 7 mg/L and 34 mg/L. These data are consistent with the results from previous sampling events. Since September 2016, TDS and TSS have ranged from 210 to 1,300 mg/L and 0 to 120 mg/L, respectively.

Next Reporting Period Planned Activities

The following activities are anticipated for October 2017:

- Brush cutting and clearing along the landfill drainage swales, the perimeter of the treatment cells, and near well vaults and other structures;
- Continued dewatering and monitoring of Unnamed Pond; and
- Continuation of iron and solids treatment and processing;

If you have any questions, please do not hesitate to contact me or Jeremy Wyckoff.

Sincerely,

Arcadis CE, Inc.

Andy Vitolins
Associate Vice President, P.G.

Copies:
Jeremy Wyckoff, Arcadis
File

Enclosures:
Table
1 September Treatment System Analytical Data

Table 1. September Treatment System Analytical Data, Fort Edward Landfill
Fort Edward, New York. NYSDEC Site No. 558001

ARCADIS Design & Consultancy for natural and built assets

Chemical Name	NYSDEC Class GA GW Standard	NYSDEC Class GA GW Effluent Limitation	INFLUENT 9/25/2017	CLARIFIER CATCH 9/25/2017	CELL 3 9/25/2017	CELL 2 9/25/2017	EFFLUENT 9/25/2017
Volatile Organic Compounds (ug/L)							
ACETONE	50	50	50.0 U	8.7 J	50.0 U	50.0 U	50.0 U
BENZENE	1	1	0.70 J	0.71 J	1.00 U	1.00 U	1.00 U
BROMOCHLOROMETHANE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BROMODICHLOROMETHANE	50	50	1.00 U	0.54	0.50 U	0.50 U	0.50 U
BROMOFORM	50	50	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BROMOMETHANE	5	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
2-BUTANONE (MEK)	50	50	1.0 U	8.0 J	20 U	20 U	20 U
CARBON DISULFIDE	60	60	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
CARBON TETRACHLORIDE	5	5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
CHLOROBENZENE	5	5	0.77 J	0.86 J	1.00 U	1.00 U	1.00 U
CHLORODIBROMOMETHANE	50	--	1.0 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROETHANE	5	5	0.42 J	0.37 J	2.00 U	2.00 U	2.00 U
CYCLOHEXANE	--	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	0.04	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.0006	0.0006	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROBENZENE	3	3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-DICHLOROBENZENE	3	3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-DICHLOROBENZENE	3	3	0.18 J	0.25 J	1.00 U	1.00 U	1.00 U
DICHLORODIFLUOROMETHANE	5	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1-DICHLOROETHANE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
CIS-1,2-DICHLOROETHYLENE	5	5	**21.0**	**20.0**	**9.2**	**6.7**	1.0 U
TRANS-1,2-DICHLOROETHYLENE	5	5	0.34 J	0.31 J	1.00 U	1.00 U	1.00 U
1,2-DICHLOROETHANE	0.6	0.6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-DICHLOROETHYLENE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-DICHLOROPROPANE	1	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
CIS-1,3-DICHLOROPROPENE	0.4	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,3-DICHLOROPROPENE	0.4	0.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-DIOXANE	--	--	50 U	50 U	50 U	50 U	50 U
ETHYLBENZENE	5	5	0.14 J	0.16 J	1.00 U	1.00 U	1.00 U
2-HEXANONE	50	50	10 U	10 U	10 U	10 U	10 U
ISOPROPYLBENZENE (CUMENE)	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
METHYL ACETATE	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
METHYL TERT-BUTYL ETHER (MTBE)	10	10	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
METHYL CYCLOHEXANE	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
METHYLENE CHLORIDE	5	5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	--	--	10 U	10 U	10 U	10 U	10 U
STYRENE	5	930	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1,2-TETRACHLOROETHANE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TETRACHLOROETHYLENE (PCE)	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	5	5	0.43 J	0.46 J	0.23 J	1.00 U	1.00 U
1,2,3-TRICHLOROBENZENE	5	5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-TRICHLOROBENZENE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-TRICHLOROETHANE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-TRICHLOROETHANE	1	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TRICHLOROETHYLENE (TCE)	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TRICHLOROFLUOROMETHANE	5	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
VINYL CHLORIDE	2	2	**19.0**	**15.0**	1.4 J	1.4 J	2.0 U
M,P-XYLENES	5	5	0.60 J	0.62 J	2.00 U	2.00 U	2.00 U
O-XYLENE (1,2-DIMETHYLBENZENE)	5	5	1.00 U	0.17 J	1.00 U	1.00 U	1.00 U
XYLENES, TOTAL	5	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U

Notes:
Constitutents detected above the NYSDEC Class GA GW Standard are in **bold**.
Constitutents detected above the NYSDEC Class GA GW Effluent Limitation are highlighted in yellow.

Definitions:
NYSDEC Class GA GW Standard - New York State Department of Environmental Conservation Groundwater Standard and Guidance Value.
NYSDEC Class GA GW Effluent Limitation - New York State Department of Environmental Conservation Effluent Limitation.
U - The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
J - The concentration is an approximate value.
mg/L - milligrams per liter
ug/L - micrograms per liter
NS - Not Sampled

Table 1. September Treatment System Analytical Data, Fort Edward Landfill
Fort Edward, New York. NYSDEC Site No. 558001

Chemical Name	NYSDEC Class GA GW Standard	NYSDEC Class GA GW Effluent Limitation	INFLUENT 9/25/2017	CLARIFIER CATCH 9/25/2017	CELL 3 9/25/2017	CELL 2 9/25/2017	EFFLUENT 9/25/2017
Polychlorinated Biphenyls (ug/L)							
PCB-1016 (AROCLOR 1016)	*	*	4.0 U	4.0 U	1.0 U	0.2 U	0.2 U
PCB-1221 (AROCLOR 1221)	*	*	4.0 U	4.0 U	1.0 U	0.2 U	0.2 U
PCB-1232 (AROCLOR 1232)	*	*	**30.0**	**37.0**	**3.9**	0.2 U	0.2 U
PCB-1242 (AROCLOR 1242)	*	*	4.0 U	4.0 U	1.0 U	0.2 U	0.2 U
PCB-1248 (AROCLOR 1248)	*	*	4.0 U	4.0 U	1.0 U	0.2 U	0.2 U
PCB-1254 (AROCLOR 1254)	*	*	4.0 U	4.0 U	1.0 U	0.2 U	0.2 U
PCB-1260 (AROCLOR 1260)	*	*	4.0 U	4.0 U	1.0 U	0.2 U	0.2 U
PCB-1262 (AROCLOR 1262)	*	*	4.0 U	4.0 U	1.0 U	0.2 U	0.2 U
PCB-1268 (AROCLOR 1268)	*	*	4.0 U	4.0 U	1.0 U	0.2 U	0.2 U
Metals (mg/L)							
ALUMINUM	--	2	0.050 U	1.500	0.087	0.050 U	0.130
ANTIMONY	0.003	0.006	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ARSENIC	0.025	0.05	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
BARIUM	1	2	0.066	0.060	0.071	0.080	0.052
BERYLLIUM	0.003	0.003	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
CADMIUM	0.005	0.01	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
CALCIUM	--	--	91	88	100	110	94
CHROMIUM, TOTAL	0.05	0.1	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
COBALT	--	--	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
COPPER	0.2	1	0.010 U	0.018	0.010 U	0.010 U	0.010 U
IRON	0.3	0.6	**17.0**	**6.7**	**5.5**	**10.0**	**4.2**
LEAD	0.025	0.05	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
MAGNESIUM	35	35	24	24	24	22	26
MANGANESE	0.3	0.6	**1.8**	**1.7**	**1.4**	**1.4**	**2.4**
MERCURY	0.0007	0.0014	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
NICKEL	0.1	0.2	0.010 U	0.042	0.010 U	0.010 U	0.010 U
POTASSIUM	--	--	4.7	5.3	2.9	2.0 U	2.0 U
SELENIUM	0.01	0.02	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
SILVER	0.05	0.1	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SODIUM	20	--	**52**	**66**	**67**	**65**	**44**
THALLIUM	0.0005	0.0005	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
VANADIUM	--	--	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
ZINC	2	5	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Conventional Chemistry (mg/L)							
TOTAL DISSOLVED SOLIDS	--	--	380	430	450	490	420
TOTAL SUSPENDED SOLIDS	--	--	12	18	34	7	8

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* The NYSDEC Class GA GW Standard and Effluent Limitation for PCBs is 0.09 ug/L.

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