ARCADIS Design & Consultancy for natural and built assets

Payson Long
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Subject:
May 2019 Monthly Report
Fort Edward Landfill
NYSDEC Site No. 558001
Contract No. D007618-39

Date:
July 3, 2019

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 May 2019 reporting period at the above-referenced site.

Leachate Collection and Treatment System Operation and Maintenance

The leachate collection system shut down on four occasions in May 2019 due to level sensor failure alarms at extraction well EW-4. The issue was temporarily resolved each time by resetting the PLC or resetting the breaker at the panel. These failure alarms are ultimately caused by poor wiring connections within the electrical boxes and conduits.

A total of 26,755 gallons of leachate were collected and treated through the system during May 2019. The corresponding average leachate recovery rate for the month was approximately 0.6 gallons per minute (gpm).

The following operation and maintenance (O&M) activities were completed during the May 2019 operating period:

- The secondary pump recirculation line in leachate collection well EW-4 was hard piped to the bottom of the vault to enhance circulation and removal of sludge within the vault.

- The Cell 3 cleanout CO 3-2 flange was replaced because of cracks formed at the connection during the winter. The piping was cut so that the cleanout would no longer be exposed above grade.
- Wild parsnip was identified on the landfill cap and slopes (Figure 1).
- Iron and solids sludge processing was performed throughout the month. Three 55-gallon drums of sludge were generated during May 2019.

System Sampling

Water samples were collected on May 28, 2019 from the following treatment system locations:

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

No samples were collected from extraction wells EW-1, EW-2, EW-3, leachate collection well EW-4, or Cell 1 Chamber (treatment Cell 1 discharge into the effluent collection chamber). Samples from these locations are collected on a quarterly basis and will be sampled again in June 2019.

The monthly 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 the Influent and Clarifier Catch samples at concentrations that exceeded the corresponding NYSDEC Class GA Standards. VOCs were detected in the Cell 3 Bypass, Cell 2 Effluent, and Polishing Pond Effluent samples but did not exceed the corresponding NYSDEC Class GA Standards.

PCBs

The PCB Aroclor 1016 was detected in the Influent and Clarifier Catch Tank samples at concentrations greater than the respective NYSDEC GA Standard. PCBs were not detected in the Cell 3 Bypass, Cell 2 Effluent, or Polishing Pond Effluent samples during the May 2019 sampling event (Table 1).

Metals

Iron and manganese were detected at one or more of the treatment system samples at concentrations greater than the corresponding NYSDEC Standards of 0.3 milligrams per liter (mg/L) and 0.6 mg/L, respectively. Iron concentration ranged from a maximum 7.2 mg/L (Cell 3 Bypass) to minimum 0.99 mg/L (Clarifier Catch). Manganese concentrations ranged from a maximum of 1.6 mg/L (Cell 2 Effluent) to

minimum 0.28 mg/L (Influent), which are consistent with previous data. The increase in concentrations post-Treatment System is due to fouling of the treatment cells.

TDS and TSS

The concentrations of TDS and TSS continue to fluctuate between sampling events. During the May sampling event, TDS concentrations ranged between 290 mg/L and 1,600 mg/L; TSS concentrations ranged from 6.0 mg/L and 21 mg/L. These data are consistent with the results from previous sampling events. Since September 2016, TDS and TSS have ranged from 210 to 4,900 mg/L and non-detect (ND) to 200 mg/L, respectively.

Next Reporting Period Planned Activities

The following activities are anticipated for June 2019:

- Continuation of iron and solids treatment and processing;
- Annual mowing of landfill cap and site features;
- Offsite transportation and disposal of filter sludge drums; and
- Routine monthly system and quarterly sampling.

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

Sincerely,

Arcadis CE, Inc.

Andy Vitolins, P.G.
Vice President

Copies:
Jeremy Wyckoff, Arcadis
File

Enclosures:
Table 1 – May 2019 Treatment System Analytical Data
Figure 1 – Wild Parsnip Locations

Table 1. May 2019 Treatment System Analytical Data, Fort Edward Landfill
Fort Edward, New York. NYSDEC Site No. 558001

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Chemical Name	NYSDEC Class GA GW Standard	NYSDEC Class GA GW Effluent Limitation	INFLUENT 5/28/2019	CLARIFIER CATCH 5/28/2019	CELL 3 5/28/2019	CELL 2 5/28/2019	EFFLUENT 5/28/2019
Volatile Organic Compounds (ug/L)							
ACETONE	50	50	23 J	**100**	50 U	50 U	50 U
BENZENE	1	1	0.95 J	1.0 U	1.0 U	1.0 U	1.0 U
BROMOCHLOROMETHANE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BROMODICHLOROMETHANE	50	50	3.3	21	0.5 U	0.5 U	0.5 U
BROMOFORM	50	50	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BROMOMETHANE	5	5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-BUTANONE (MEK)	50	50	20 U	3.8 J	20 U	20 U	20 U
CARBON DISULFIDE	60	60	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
CARBON TETRACHLORIDE	5	5	0.41 J	5.0 U	5.0 U	5.0 U	5.0 U
CHLOROBENZENE	5	5	**8.0**	0.99 J	1.0 U	1.0 U	1.0 U
CHLORODIBROMOMETHANE	50	--	0.67	2.4	0.5 U	0.5 U	0.5 U
CHLOROETHANE	5	5	1.5 J	2.0 U	2.0 U	2.0 U	2.0 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	0.38 J	1.0 U	1.0 U	1.0 U	1.0 U
1,3-DICHLOROBENZENE	3	3	0.24 J	1.0 U	1.0 U	1.0 U	1.0 U
1,4-DICHLOROBENZENE	3	3	**4.4**	0.76 J	1.0 U	1.0 U	1.0 U
DICHLORODIFLUOROMETHANE	5	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1-DICHLOROETHANE	5	5	0.31 J	1.0 U	1.0 U	1.0 U	1.0 U
CIS-1,2-DICHLOROETHYLENE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TRANS-1,2-DICHLOROETHYLENE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 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	**0.41 J**	**0.75**	0.5 U	0.5 U	0.5 U
1,4-DIOXANE	--	--	46 J	37 J	50 U	50 U	50 U
ETHYLBENZENE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 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	0.47 J	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	0.47 J	5.0 U	5.0 U	0.38 J	5.0 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	--	--	5.4 J	5.9 J	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	1.0 U	1.0 U	0.45 J	1.0 U	1.0 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	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
M,P-XYLENES	5	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
O-XYLENE (1,2-DIMETHYLBENZENE)	5	5	1.0 U	0.17 J	1.0 U	1.0 U	1.0 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.
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.
ug/L - micrograms per liter
mg/L - milligrams per liter

Table 1. May 2019 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 5/28/2019	CLARIFIER CATCH 5/28/2019	CELL 3 5/28/2019	CELL 2 5/28/2019	EFFLUENT 5/28/2019
Polychlorinated Biphenyls (ug/L)							
PCB-1016 (AROCLOR 1016)	*	*	**1.3**	**0.64**	0.32 U	0.32 U	0.32 U
PCB-1221 (AROCLOR 1221)	*	*	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
PCB-1232 (AROCLOR 1232)	*	*	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
PCB-1242 (AROCLOR 1242)	*	*	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
PCB-1248 (AROCLOR 1248)	*	*	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
PCB-1254 (AROCLOR 1254)	*	*	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
PCB-1260 (AROCLOR 1260)	*	*	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
PCB-1262 (AROCLOR 1262)	*	*	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
PCB-1268 (AROCLOR 1268)	*	*	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
ALUMINUM	--	2	0.05 U	0.2	0.057	0.063	0.05 U
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	0.09	0.05 U	0.05 U	0.05 U	0.05 U
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	--	--	68	63	76	78	69
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	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
IRON	0.3	0.6	**4.9**	**0.99**	**7.2**	**2.4**	**2.5**
LEAD	0.025	0.05	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
MAGNESIUM	35	35	34	28	13	12	18
MANGANESE	0.3	0.6	0.28	**0.56**	**1.4**	**1.6**	**1.7**
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	0.01 U	0.018	0.01 U	0.010 U	0.01 U
POTASSIUM	--	--	32	26	3.3	2.9	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	--	**150**	**480**	**34**	**30**	**22**
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	0.049	0.088	0.02 U	0.02 U	0.02 U
Conventional Chemistry (mg/L)							
TOTAL DISSOLVED SOLIDS	--	--	690	1600	350	310	290
TOTAL SUSPENDED SOLIDS	--	--	12	8.3	21	6.0	7.2

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.

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

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.

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mg/L - milligrams per liter

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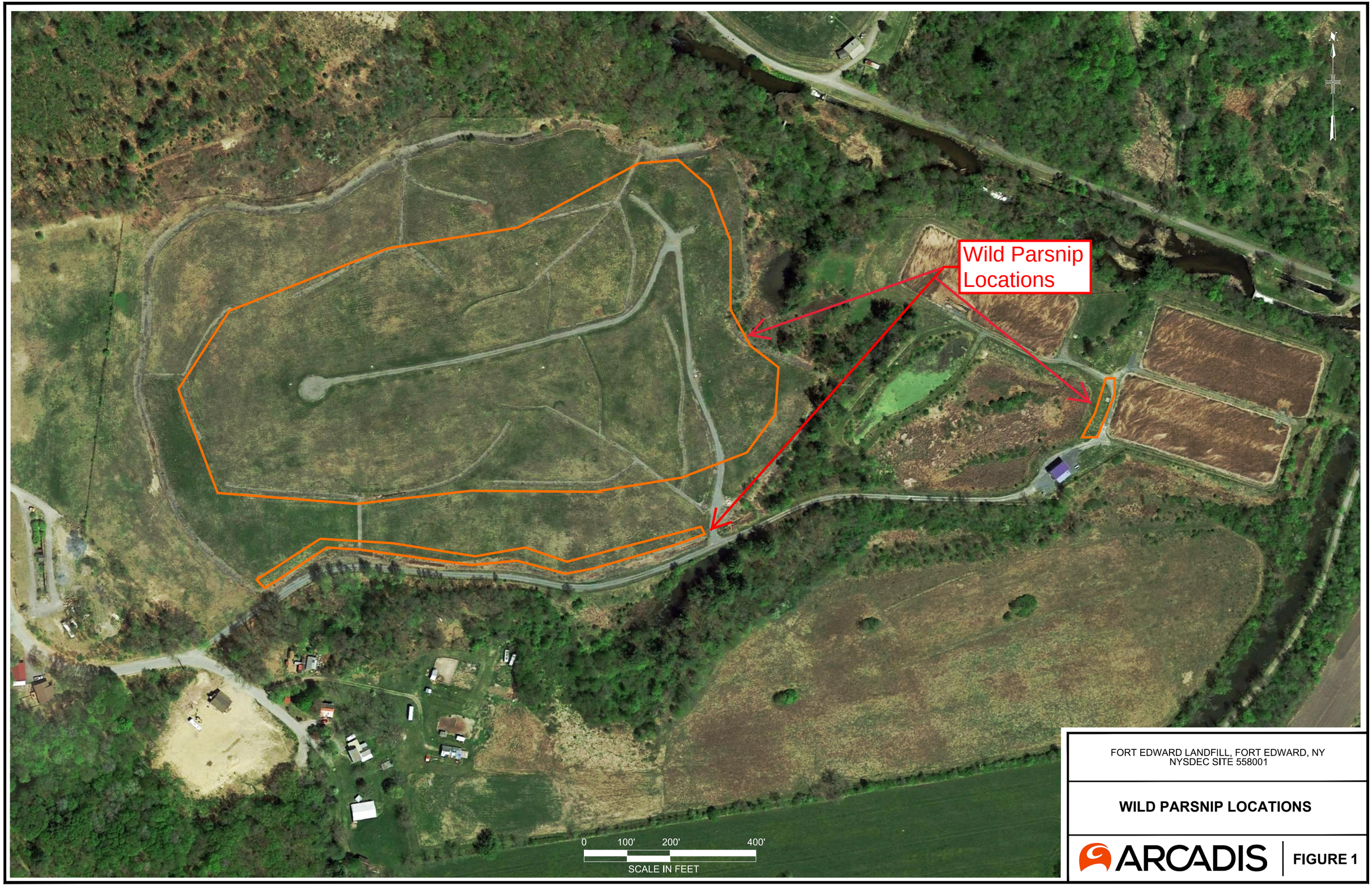

FORT EDWARD LANDFILL, FORT EDWARD, NY
NYSDEC SITE 558001

WILD PARSNIP LOCATIONS

ARCADIS | **FIGURE 1**