



SUNNY FARMS LANDFILL
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INTRODUCTION

On April 8 and May 6, 2019 surface water and soil sediment samples were collected from various locations at the Sunny Farms Landfill. The locations were selected by the Seneca County General Health District (SCGHD). The samples were collected by Bo-Juhn Environmental Services (Bo-Juhn) of Fostoria, Ohio. The collected samples were split for laboratory analysis between Bo-Juhn (on behalf of Sunny Farms) and Alloway (on behalf of SCGHD). The sample collection was observed by representatives of SCGHD, Loudon Township, Bill McAllister (citizen), Alloway, and Sunny Farms.

The water samples meet drinking water standards and the soil samples meet residential use criteria (suitable for use homes and playgrounds).

RESULTS AND DETAILED DISCUSSION

The attached table and discussion provided by Civil & Environmental Consultants, Inc. summarizes the results. As shown in the table:

1. Surface Water Sample Results

For the surface water samples, the analytical results were compared to Ohio Water Quality Criteria for Water Supply Use Designation, which apply to water bodies located within 500 yards of drinking water intakes. The analytical results were also compared to Maximum Contaminant Levels (MCLs) from Drinking Water Standards for Ohio Public Water Systems. The results are typical for the state, meet primary drinking water standards, and are not a threat to human health.

Only 1 sample (Pond 2 @ Unloading Bldg) had reported concentrations above a standard. Specifically, iron, manganese and TDS were reported at concentrations above the Water Quality Criteria (iron, TDS) for Secondary MCL (iron, manganese, TDS). Secondary MCLs are typically associated with aesthetics (taste, smell, etc.) and are provided by Ohio EPA as advisable standards. Note that the Ohio EPA Secondary MCLs are the same as US EPA Secondary MCLs for these parameters and are not enforced by US EPA. Secondary MCLs are advisory standards related to aesthetics (taste, color, odor) and are not considered to present a risk to human health at the Secondary MCL. Concentrations for iron, manganese and TDS in the Pond 2 @ Unloading Bldg sample only slightly exceed the Secondary MCLs, and the quality of the water sample does not exceed Primary MCLs which means the water meets drinking water standards. Further, the iron, manganese and TDS concentrations are consistent with average concentrations for Ohio public drinking water supplies and typical for Ohio groundwater (Ohio 2014 Integrated Report, Section M; Ohio EPA, 2014). Specifically, the iron concentration (0.5134 mg/L) is below

the average concentrations for sand and gravel aquifers (1.18 mg/L) and carbonate aquifers (1.10 mg/L). Further, the manganese concentration (0.051 mg/L) falls within the average concentrations for sand and gravel aquifers (0.19 mg/L) and carbonate aquifers (0.032 mg/L). Finally, the TDS concentration (658 mg/L) falls within the average concentrations for sand and gravel aquifers (459 mg/L) and carbonate aquifers (718 mg/L).

2. Sediment Sample Results

For the sediment samples, the analytical results were compared to Ohio Voluntary Action Program (VAP) generic numerical standards for direct contact, including 3 scenarios: residential land use; commercial/industrial land use; and construction/excavation activities. As shown, there were no exceedances reported for any sample, including the residential land use standards. This means that the sediment could be used in residential land use applications such as parks, playgrounds and residential uses.

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TABLE 2
SUMMARY OF SEDIMENT QUALITY DATA

Parameter	Unit	Bojhun Channel to Pond 2	Bojhun CSX Culvert Inlet	Bojhun Pond 4 Culvert Inlet	Bojhun Pond 2 N RR Culvert	Ohio VAP Direct Contact - Residential Land Use (1)	Ohio VAP Direct Contact - Commercial / Industrial Land Use (1)	Ohio VAP Direct Contact - Construction / Excavation Activities (1)
Sample Date		4/8/2019	4/8/2019	4/8/2019	5/6/2019			
INORGANIC COMPOUNDS								
Ammonia (as N)	mg/Kg	0.726	2.33	0.678	7.75	NSA	NSA	NSA
Antimony, Total	mg/Kg	<4.97	<4.92	<4.98	<3.86	63	1600	850
Arsenic, Total	mg/Kg	8.17	6.35	7.17	7.25	12	77	690
Barium, Total	mg/Kg	113.42	110.04	74.12	87.48	30000	760000	350000
Beryllium, Total	mg/Kg	<0.994	<0.984	<0.996	<0.773	310	7800	3400
Cadmium, Total	mg/Kg	0.964	1.01	0.737	0.81	140	2600	1000
Chloride	mg/Kg	12.2	9.74	61.4	20.48	NSA	NSA	NSA
Chromium, Total(2)	mg/Kg	23.23	27.65	17.81	23.13	230000	1000000	890000
Cobalt, Total	mg/Kg	9.06	10.51	9.81	9.47	47	1400	2900
Copper, Total	mg/Kg				35.09	6300	160000	21000
Lead, Total	mg/Kg	40.04	15.96	23.42	32.43	400	800	400
Nickel, Total	mg/Kg	25.63	32.61	23.14	26.56	3100	74000	23000
Potassium, Total	mg/Kg	4111.33	4471.46	3487.05	4425.04	NSA	NSA	NSA
Selenium, Total	mg/Kg	<2.98	<2.95	<2.99	<1.545595	780	20000	11000
Silver, Total	mg/Kg	<1.99	<1.97	<1.99	<1.545596	780	20000	11000
Sodium, Total	mg/Kg				350.08	NSA	NSA	NSA
Thallium, Total	mg/Kg	<0.99	<0.98	<1.0	<0.77	NSA	NSA	NSA
Vanadium, Total	mg/Kg	35.83	45.94	30.40	32.78	790	23000	12000
Zinc, Total	mg/Kg				139.18	47000	1000000	640000
VOLATILE ORGANIC COMPOUNDS (VOCs)								
1,1,1,2-Tetrachloroethane	mg/Kg	<250	<250	<250	<50	46	240	680
1,1,2,2-Tetrachloroethane	mg/Kg	<250	<250	<250	<50	14	75	670
1,1,1-Trichloroethane	mg/Kg	<250	<250	<250	<50	640	640	640
1,1,2-Trichloroethane	mg/Kg	<250	<250	<250	<50	26	140	1200
1,2,3-Trichloropropane	mg/Kg	<250	<250	<250	<50	0.46	4.4	19
1,2,4-Trimethylbenzene	mg/Kg		<250			160	220	220
1,3,5-Trimethylbenzene	mg/Kg		<250			180	180	180
1,2-Dichlorobenzene	mg/Kg	<250	<250	<250	<50	380	380	380
1,3-Dichlorobenzene	mg/Kg				<50	NSA	NSA	NSA
1,4-Dichlorobenzene	mg/Kg	<250	<250	<250	<50	61	310	2600
1,1-Dichloroethane	mg/Kg	<250	<250	<250	<50	83	420	1700
1,1-Dichloroethylene	mg/Kg	<250	<250	<250	<50	360	1200	360
1,2-Dichloroethane	mg/Kg	<250	<250	<250	<50	11	56	480
1,2-Dibromoethane (EDB)	mg/Kg	<250	<250	<250	<50	0.83	4.4	38
1,2-Dichloropropane	mg/Kg	<250	<250	<250	<50	23	120	180
1,2-Dibromo-3-Chloropropane (DBCP)	mg/Kg	<250	<250	<250	<50	0.34	1.7	15
cis-1,2-Dichloroethylene	mg/Kg	<250	<250	<250	<50	310	2400	2400
cis-1,3-Dichloropropene	mg/Kg	<250	<250	<250	<50	NSA	NSA	NSA
2-Hexanone (MBK)	mg/Kg	<1000	<1000	<1000	<200	NSA	NSA	NSA
Acetone	mg/Kg	<1000	<1000	<1000	<200	110000	110000	110000
Acrylonitrile	mg/Kg	<1000	<1000	<1000	<200	5.7	32	62
Benzene	mg/Kg	<250	<250	<250	<50	26	140	1200
Bromobenzene	mg/Kg		<250			NSA	NSA	NSA
Bromochloromethane	mg/Kg	<250	<250	<250	<50	NSA	NSA	NSA
Bromodichloromethane	mg/Kg	<250	<250	<250	<50	6.8	35	300
Bromoform	mg/Kg	<250	<250	<250	<50	1200	6200	130000
Bromomethane	mg/Kg	<250	<250	<250	<50	18	82	550
Carbon Disulfide	mg/Kg	<250	<250	<250	<50	740	740	740
Carbon Tetrachloride	mg/Kg	<250	<250	<250	<50	15	79	460
Chlorobenzene	mg/Kg	<250	<250	<250	<0.050	700	760	760
Chloroethane	mg/Kg	<250	<250	<250	<50	2100	2100	2100
Chloroform	mg/Kg	<250	<250	<250	<50	7.4	38	320
Chloromethane	mg/Kg	<250	<250	<250	<50	300	1300	1300
Dibromomethane	mg/Kg	<250	<250	<250	<50	1600	2800	2800
Dibromochloromethane	mg/Kg	<250	<250	<250	<50	17	84	770
Dichlorodifluoromethane	mg/Kg	<250	<250	<250	<50	850	850	850
Ethylbenzene	mg/Kg	<250	<250	<250	<50	130	480	480
Iodomethane	mg/Kg	<250	<250	<250	<50	NSA	NSA	NSA
Methyl Ethyl Ketone	mg/Kg	<1000	<1000	<1000	<200	28000	28000	28000
Methyl Isobutyl Ketone	mg/Kg	<1000	<1000	<1000	<200	3400	3400	3400
Methylene Chloride	mg/Kg	<250	<250	<250	<50	750	3300	3300
Styrene	mg/Kg	<250	<250	<250	<50	870	870	870
Tetrachloroethylene	mg/Kg	<250	<250	<250	<50	170	170	170
Toluene	mg/Kg	<250	<250	<250	<50	820	820	820
trans-1,2-Dichloroethylene	mg/Kg	<250	<250	<250	<50	370	1700	1700
trans-1,3-Dichloropropene	mg/Kg	<250	<250	<250	<50	NSA	NSA	NSA
trans-1,4-Dichloro-2-butene	mg/Kg	<250	<250	<250	<50	0.17	0.88	7.4
Trichloroethylene	mg/Kg	<250	<250	<250	<50	11	51	17
Trichlorofluoromethane	mg/Kg	<250	<250	<250	<50	1200	1200	1200
Vinyl Acetate	mg/Kg	<250	<250	<250	<50	620	2700	620
Vinyl Chloride	mg/Kg	<250	<250	<250	<50	1.3	50	280
Xylenes, Total	mg/Kg	<750	<750	<750	<150	260	260	260
POLYCHLORINATED BIPHENYLS (PCBs)								
PCB-1016	mg/Kg	<0.05	<0.05	<0.05	<0.05	7.9	100	260
PCB-1221	mg/Kg	<0.05	<0.05	<0.05	<0.05	3.1	14	210
PCB-1232	mg/Kg	<0.05	<0.05	<0.05	<0.05	3.1	14	73
PCB-1242	mg/Kg	<0.05	<0.05	<0.05	<0.05	4.4	20	440
PCB-1248	mg/Kg	<0.05	<0.05	<0.05	<0.05	4.4	20	440
PCB-1254	mg/Kg	<0.05	<0.05	<0.05	<0.05	2.2	20	75
PCB-1260	mg/Kg	<0.05	<0.05	<0.05	<0.05	4.4	20	440

Notes:

Bold indicates concentration above reporting limit. Shading indicates concentration above health based standard.

1 = Ohio Voluntary Action Program generic numerical standards for direct contact with soil per OAC Rule 3745-300-08, effective May 26, 2016, including supplemental criteria effective May 2, 2017.

2 = The VAP standard for chromium III was used for comparison to total chromium results.

NSA = No Standard Available.

Value reported as < indicates the parameter was not detected at the laboratory reporting limit.