



Tacoma - Pierce County
Health Department
Healthy People in Healthy Communities

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Spring 2019 Summary Report
Residential Drinking Water Well Sampling
LRI Landfill

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Summary

Background

This water quality summary report is for the sampling events conducted in Spring 2019.

All drinking water wells within one-half (1/2) mile of the LRI Landfill boundary are eligible for free yearly water quality sampling. The Spring 2019 water sampling is a continuation of the *Residential Drinking Water Well Program (Program)* developed and implemented in 2006, by the Tacoma-Pierce County Health Department (Health Department), in response to concerns raised during LRI Landfill's solid waste permit re-issuance process. The Program is a requirement of the LRI Landfill Solid Waste Handling Permit, issued by the Health Department. Substances chosen for testing by the Health Department were selected to assess groundwater quality. These tests can provide information about possible groundwater impacts from the landfill.

The Program allows property owners to have their well water sampled in either the Spring ("Spring Participants") or Fall ("Fall Participants") of each year and may decline participation in the Program or drop out of the Program at any time.

Water samples are tested annually for twenty characteristics and substances, including conductivity, pH, ammonia, nitrate, chloride, iron, manganese, magnesium, and Coliform bacteria. Participating property owners will also have their water tested once every five years for 'Volatile Organic Compounds' (VOCs). Starting with the spring 2015 sampling event, Woodbrook Homeowners Association members are eligible for annual VOC testing as part of their legal settlement with LRI over the relocation of Woodbrook Road (317th Street East).

Although landfills are not regarded as a source of Coliform bacteria in groundwater, the Health Department elected to include Coliform bacteria testing as part of the sampling program. These tests are taken due to the known health effects of bacterial contamination, and because many homeowners in rural areas are unaware of possible bacterial contamination of their well water.

In addition to this Program, the Health Department has required the landfill to maintain an on-site groundwater monitoring program since 1999. Quarterly nine wells around the perimeter of the landfill property are sampled. This groundwater monitoring data is available from the Health Department.

Spring 2019 Sampling Event

The Spring 2019 sampling event collected samples at 21 properties from April 29 through May 1, 2019. Samples collected by the Health Department were analyzed by independent Washington State certified analytical laboratories. Spectra Laboratories performed bacteriological analyses and a resample for nitrates, and OnSite Environmental Inc. performed organic and inorganic chemical analyses. 2019 Spring participants were sent detailed water quality test results in July 2019. No landfill-related impacts to groundwater quality were identified from the water quality test results.

Fourteen residential wells were tested for VOCs. Styrene was detected in one well water sample at 0.78 ppb. The compound *Styrene* is not naturally occurring in Pierce County groundwater. It was noted that this well location had a nylon rope going down the well that was attached to the submersible pump. Nylon rope is often made of *Polystyrene* and Polypropylene plastics. Due to the very low level of *Styrene* found in this well water, it is possible that the rope is the source of the *Styrene*. *Styrene* at the levels detected in these

water samples has not been shown to pose a health threat. Re-sampling of this well was not considered necessary.

Two well samples tested above the MCL for nitrates. Both parcels have a history of livestock pasturing close to the well. One had livestock actively pastured around the well house. Both wells were resampled and results from that resample were still high. Individual well sampling results were sent to both well owners with a nitrate fact sheet.

The remaining Spring 2019 water quality test results are consistent with earlier sampling events and show groundwater near the landfill is still typical of groundwater chemistry in Pierce County. Iron and manganese levels were consistently above the secondary standards set by the Washington State Department of Health. Elevated iron and manganese levels are typical of groundwater conditions throughout much of Pierce County due to the underlying geology.

Washington State Department of Health considers iron and manganese a “secondary contaminant.” Secondary contaminants pose aesthetic problems rather than health concerns. High levels of iron and manganese can give water a metallic taste, cause odors, and can cause brown or black staining of porcelain fixtures exposed to the water. They are not a result of the LRI Landfill.

Tables 1 and 2 have a complete list of water quality test results. Results that exceed the state water quality standards are bolded.

Staff took duplicate samples for quality control purposes at three locations. **Tables 3 and 4** have those quality control sample results.

Bacteria

Six of the 21 wells tested had bacteria present in their well water (bacteria in the water is shown as an “unsatisfactory” test result and indicated as a “U” in Table 1). One bacteria sample had an Ecoli result. This may be due to livestock near the well.

Contact us.

For report questions or sample results, please contact Michelle Harris at (253) 798-7683 or mharris@tpchd.org.

TABLE 1: LRI Landfill Residential Well Sampling Program – Spring 2019 Water Quality Results
Chemical or Analyte*----->

		General Chemistry						Dissolved Metals										Total Metals					
Site	Sample Date	Ammonia	Chloride	Nitrate	Nitrite	Sulfate	Total Dissolved Solids	Arsenic	Barium	Calcium	Copper	Iron	Magnesium	Manganese	Potassium	Sodium	Vanadium	Zinc	Iron	Manganese	Conductivity	Bacteria	pH
MCL			250	10	1	250	500	0.01	2		1.3							5	0.3	0.05	700		
SR0117460	4/29/2019	0.71	3.1	ND	ND	ND	120	0.011	ND	22	ND	0.15	8.1	1.6	2.8	16	ND	ND	2.9	1.9	240	S	7.94
SR0120529	5/1/2019	ND	2.2	ND	ND	ND	110	ND	ND	15	ND	0.19	6.7	0.16	1.4	9.8	ND	0.036	0.83	0.18	160	S	8.06
SR0120539	4/29/2019	ND	9.7	11	ND	8.7	150	ND	ND	20	0.017	ND	11	ND	2.4	9.6	ND	0.031	0.29	ND	247	U	6.59
SR0120545	4/30/2019	ND	12	4.9	ND	ND	140	ND	ND	16	ND	ND	10	ND	3.1	10	ND	ND	0.29	ND	218.3	S	6.73
SR0120549	5/1/2019	ND	2.3	ND	ND	ND	120	ND	ND	16	ND	ND	6.3	0.14	1.2	12	ND	0.029	0.63	0.16	174	U	8.29
SR0120553	4/30/2019	ND	2.6	0.75	ND	ND	64	ND	ND	12	ND	ND	4.1	ND	1.8	6.7	ND	ND	0.23	ND	117.4	S	6.96
SR0120559	5/1/2019	ND	2.5	ND	ND	ND	100	0.0041	ND	17	ND	ND	5.6	0.098	ND	130	ND	ND	0.19	0.12	173	S	8.25
SR0120560	4/30/2019	0.37	3.9	ND	ND	ND	140	0.0045	ND	22	ND	0.67	8.7	0.95	1.8	18	ND	ND	1.2	1	247	U	7.68
SR0120561	4/29/2019	0.39	8.1	ND	ND	ND	120	0.0031	ND	22	ND	ND	8.6	0.55	2.1	19	ND	ND	0.75	0.62	259	S	7.82
SR0120564	4/30/2019	ND	22	11	ND	22	180	ND	0.035	28	ND	ND	11	ND	9.9	14	ND	0.031	ND	ND	304	E	6.87
SR0120566	5/1/2019	ND	2.5	ND	ND	ND	91	ND	ND	14	ND	0.3	6.8	0.18	1.5	9	ND	ND	0.88	0.19	158	S	8.09
SR0120634	5/1/2019	ND	2.2	ND	ND	ND	110	ND	ND	11	ND	0.13	6.2	ND	1.9	8.1	ND	ND	0.37	ND	126	S	7.77
SR0120644	4/30/2019	ND	10	ND	ND	9.9	140	0.0052	ND	26	ND	ND	12	0.15	4	9.1	ND	ND	0.083	0.18	264	U	8.19
SR0120646	4/30/2019	0.1	5	ND	ND	ND	96	0.0036	ND	18	ND	ND	6.7	0.24	2.6	13	ND	ND	0.19	0.26	188.6	U	8.09
SR0120939	4/29/2019	0.061	2.7	ND	ND	ND	60	ND	ND	14	ND	ND	5.9	0.19	1.7	9.2	ND	ND	0.44	0.21	154	S	8.04
SR0121035	5/1/2019	0.11	3.2	ND	ND	ND	120	0.0047	ND	15	ND	0.37	6.8	0.33	2	16	ND	ND	1.2	0.37	194	S	7.59
SR0126566	4/29/2019	ND	2.7	ND	ND	ND	63	ND	ND	17	ND	ND	5.9	0.33	1.4	14	ND	ND	0.35	0.38	185	S	8.25
SR0154487	5/1/2019	ND	2.7	ND	ND	ND	100	ND	ND	ND	ND	ND	ND	ND	ND	41	ND	ND	ND	ND	151	S	8.47
SR0170781	4/29/2019	ND	10	ND	ND	ND	220	0.0098	ND	ND	ND	ND	ND	ND	ND	91	ND	ND	ND	ND	367	S	7.87
SR0173998	4/29/2019	ND	3.5	1.5	ND	ND	100	ND	ND	11	ND	ND	9	ND	1.4	8.2	12	ND	ND	ND	159	S	7.36
SR0205003	4/30/2019	ND	2.8	0.084	ND	ND	97	ND	ND	13	ND	0.12	7.8	0.029	2.2	8.3	ND	ND	2.4	0.035	160.5	S	7.5

Units of measurement = Parts Per Million (mg/L), except for bacteria, conductivity, and pH
ND = Not detected at the specified laboratory detection limit
E = Unsatisfactory (Ecoli are present in the sample)
U = Unsatisfactory (bacteria are present in the sample)
S = Satisfactory
**MCL = Maximum Contamination Level

Please refer to the “Water Quality and Abbreviation and Notes” page for information about the terms used on this table.

TABLE 2: LRI Landfill Residential Well Sampling Program – Spring 2019 Water Quality VOC Results

	MCL	SR0120529	SR0120545	SR0120549	SR0120553	SR0120559	SR0120560	SR0120564	SR0120566	SR0120634	SR0120644	SR0120646	SR0121035	SR0154487	SR0205003
1,1,1,2-Tetrachloroethane	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinylether	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorotoluene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CFC-11	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CFC-12	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cis-1,2-Dichloroethene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cis-1,3-Dichloropropene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorobromomethane	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene dibromide	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m, p-Xylene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Iodide	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Isobutyl Ketone	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl t-Butyl Ether	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.78	ND
tert-Butylbenzene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,2-Dichloroethene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trans-1,3-Dichloropropene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Acetate	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Units of measurement = Parts per Billion (ug/L)

ND = Not detected at the specified laboratory detection limit
MCL = Maximum Contamination Level

TABLE 3: LRI Landfill Residential Well Sampling Program – Spring 2019 Water Quality Duplicate Results

Chemical or Analyte*-----→																				
		General Chemistry						Dissolved Metals											Total Metals	
Site	Sample Date	Ammonia	Chloride	Nitrate	Nitrite	Sulfate	Total Dissolved Solids	Arsenic	Barium	Calcium	Copper	Iron	Magnesium	Manganese	Potassium	Sodium	Vanadium	Zinc	Iron	Manganese
MCL			250	10	1	250	500	0.01	2		1.3							5	0.3	0.05
SR0120566-D	5/1/2019	ND	2.3	ND	ND	ND	120	ND	ND	15	ND	ND	7	0.16	1.4	9.4	ND	ND	0.95	0.2
SR0120566	5/1/2019	ND	2.5	ND	ND	ND	91	ND	ND	14	ND	0.3	6.8	0.18	1.5	9	ND	ND	0.88	0.19
SR0120939-D	4/29/2019	0.06	2.4	ND	ND	ND	81	ND	ND	14	ND	0.21	6.1	0.19	1.5	9.2	ND	ND	0.4	0.21
SR0120939	4/29/2019	0.061	2.7	ND	ND	ND	60	ND	ND	14	ND	ND	5.9	0.19	1.7	9.2	ND	ND	0.44	0.21
SR0205003-D	4/30/2019	ND	3.1	0.081	ND	ND	100	ND	ND	13	ND	0.39	7.8	0.027	2.1	8.3	ND	ND	2.5	0.031
SR0205003	4/30/2019	ND	2.8	0.084	ND	ND	97	ND	ND	13	ND	0.12	7.8	0.029	2.2	8.3	ND	ND	2.4	0.035

Units of measurement = Parts Per Million (mg/L)

ND = Not detected at the specified laboratory detection limit

**MCL = Maximum Contamination Level

MCL exceedances for Iron and Manganese do not pose a health risk.

*Please refer to the “Water Quality and Abbreviation and Notes” page for information about the terms used on this table.

TABLE 4: LRI Landfill Residential Well Sampling Program – Spring 2019 Water Quality VOC Duplicate Results

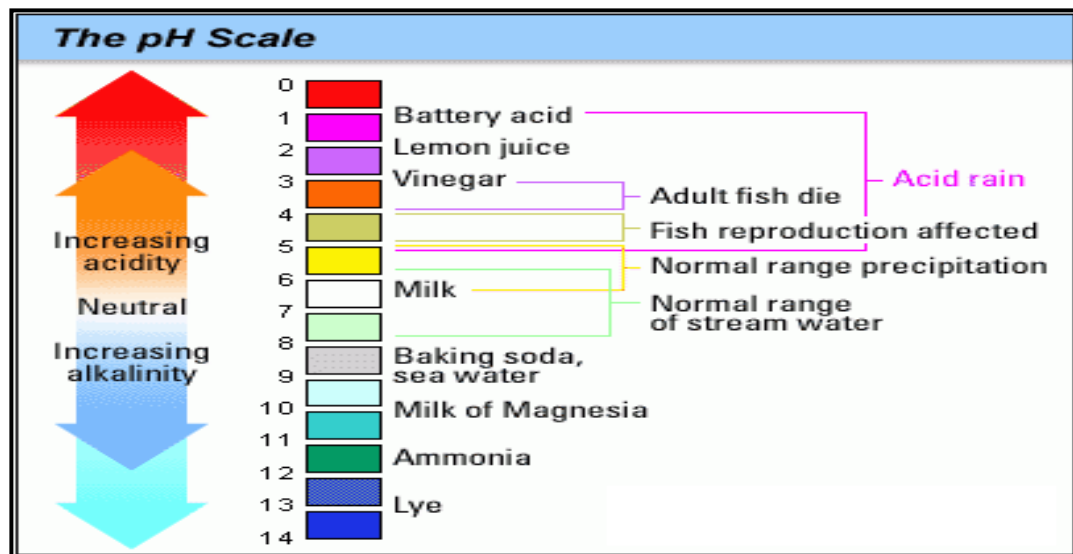
	MCL	SR0120566-D	SR0120566	SR0205003-D	SR0205003
1,1,1,2-Tetrachloroethane	---	ND	ND	ND	ND
1,1,1-Trichloroethane	0.2	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	---	ND	ND	ND	ND
1,1,2-Trichloroethane	---	ND	ND	ND	ND
1,1-Dichloroethane	1	ND	ND	ND	ND
1,1-Dichloroethene	---	ND	ND	ND	ND
1,1-Dichloropropene	---	ND	ND	ND	ND
1,2,3-Trichlorobenzene	---	ND	ND	ND	ND
1,2,3-Trichloropropane	---	ND	ND	ND	ND
1,2,4-Trichlorobenzene	---	ND	ND	ND	ND
1,2,4-Trimethylbenzene	---	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	---	ND	ND	ND	ND
1,2-Dichlorobenzene	---	ND	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND	ND
1,2-Dichloropropane	0.6	ND	ND	ND	ND
1,3,5-Trimethylbenzene	---	ND	ND	ND	ND
1,3-Dichlorobenzene	---	ND	ND	ND	ND
1,3-Dichloropropane	---	ND	ND	ND	ND
1,4-Dichlorobenzene	4	ND	ND	ND	ND
2,2-Dichloropropane	---	ND	ND	ND	ND
2-Butanone	---	ND	ND	ND	ND
2-Chloroethylvinylether	---	ND	ND	ND	ND
2-Chlorotoluene	---	ND	ND	ND	ND
2-Hexanone	---	ND	ND	ND	ND
4-Chlorotoluene	---	ND	ND	ND	ND
Acetone	---	ND	ND	ND	ND
Benzene	1	ND	ND	ND	ND
Bromobenzene	---	ND	ND	ND	ND
Bromochloromethane	0.3	ND	ND	ND	ND
Bromoform	5	ND	ND	ND	ND
Bromomethane	---	ND	ND	ND	ND
Carbon Disulfide	---	ND	ND	ND	ND
Carbon Tetrachloride	0.3	ND	ND	ND	ND
CFC-11	---	ND	ND	ND	ND
CFC-12	---	ND	ND	ND	ND
Chlorobenzene	---	ND	ND	ND	ND
Chloroethane	---	ND	ND	ND	ND
Chloroform	7	ND	ND	ND	ND
Chloromethane	---	ND	ND	ND	ND
Cis-1,2-Dichloroethene	---	ND	ND	ND	ND
Cis-1,3-Dichloropropene	---	ND	ND	ND	ND
Dibromochloromethane	---	ND	ND	ND	ND
Dibromomethane	---	ND	ND	ND	ND
Dichlorobromomethane	---	ND	ND	ND	ND
Ethylbenzene	---	ND	ND	ND	ND
Ethylene dibromide	---	ND	ND	ND	ND
Hexachlorobutadiene	---	ND	ND	ND	ND
Isopropylbenzene	---	ND	ND	ND	ND
m, p-Xylene	---	ND	ND	ND	ND
Methyl Iodide	---	ND	ND	ND	ND
Methyl Isobutyl Ketone	---	ND	ND	ND	ND
Methyl t-Butyl Ether	---	ND	ND	ND	ND
Methylene Chloride	5	ND	ND	ND	ND
Naphthalene	---	ND	ND	ND	ND
n-Butylbenzene	---	ND	ND	ND	ND
n-Propylbenzene	---	ND	ND	ND	ND
o-Xylene	---	ND	ND	ND	ND
p-Isopropyltoluene	---	ND	ND	ND	ND
sec-Butylbenzene	---	ND	ND	ND	ND
Styrene	---	ND	ND	ND	ND
tert-Butylbenzene	---	ND	ND	ND	ND
Tetrachloroethene	---	ND	ND	ND	ND
Toluene	---	ND	ND	ND	ND
Trans-1,2-Dichloroethene	---	ND	ND	ND	ND
Trans-1,3-Dichloropropene	---	ND	ND	ND	ND
Trichloroethene	---	ND	ND	ND	ND
Vinyl Acetate	---	ND	ND	ND	ND
Vinyl Chloride	0.02	ND	ND	ND	ND

Units of measurement = Parts per Billion (ug/L)

ND = Not detected at the specified laboratory detection limit
MCL = Maximum Contamination Level

Water Quality Abbreviations and Notes:

Analyte:	The chemical or metal tested for in the water sample.
Result:	The level of the chemical or mineral detected by the laboratory in this water sample.
ND:	Non-Detect, the chemical or metal was not detected in this water sample.
Unit:	The unit of measure reported by the laboratory.
mg/l:	milligrams per liter, or 1 part per million.
MCL:	“Maximum Contaminant Level”. The water quality standard established by state or federal regulation.
#/100ml:	The number of bacteria colonies detected in 100 milliliters of water. Note: An MCL of “0.00” means that there should be no bacteria detected in the water sample.
uS/cm:	microSiemens per centimeter, a measurement of the ability of the water to conduct an electrical charge (sometimes reported as microMhos). Used to help determine the presence of some chemical ions.
pH:	A numerical measure of the level of acidity or alkalinity of the water. See the table below.



ppb:	Parts per billion often expressed as micrograms per liter (ug/L)
Unit:	The unit of measure reported by the laboratory.
#/100ml:	Unit of measure for <i>Bacteria</i> test, the number of bacteria colonies detected in 100 milliliters of water. Note: An MCL of “0/100” means that there should be zero bacteria detected in the 100 milliliter water sample.
(---):	The Environmental Protection Agency and/or the Centers for Disease Control and Prevention have not established a health-risk based maximum contaminant level (MCL) for this chemical, metal, or property.

APPENDIX A

Sampling for Volatile Organic Compounds

LRI Drinking Water Well Sampling Program

In 2007, several program participants and members of the Graham Land Use Advisory Commission asked why 'volatile organic compounds' (VOC) had not been included in the original LRI Landfill residential drinking water sampling program. They asked to have the sampling program modified to include testing for these volatile organic compounds. Because of the request and inquiries, the sampling program was modified to include a limited suite of approximately 68 VOCs for analysis.

The program modification included a provision to test each participating well once every five-year period for VOCs. This modification began during the Fall 2007 sampling event with the testing of nine residential wells for VOCs.

Where do VOCs come from?

Common artificial sources of VOCs are many and varied, but can include paint thinners, dry cleaning solvents, and some constituents of petroleum-based fuels (e.g., gasoline and natural gas). Landfills, through the anaerobic digestion of waste generate methane gas, which is also considered a VOC.