

APPENDIX III

Trilinear Diagrams and Ion Balance Calculations

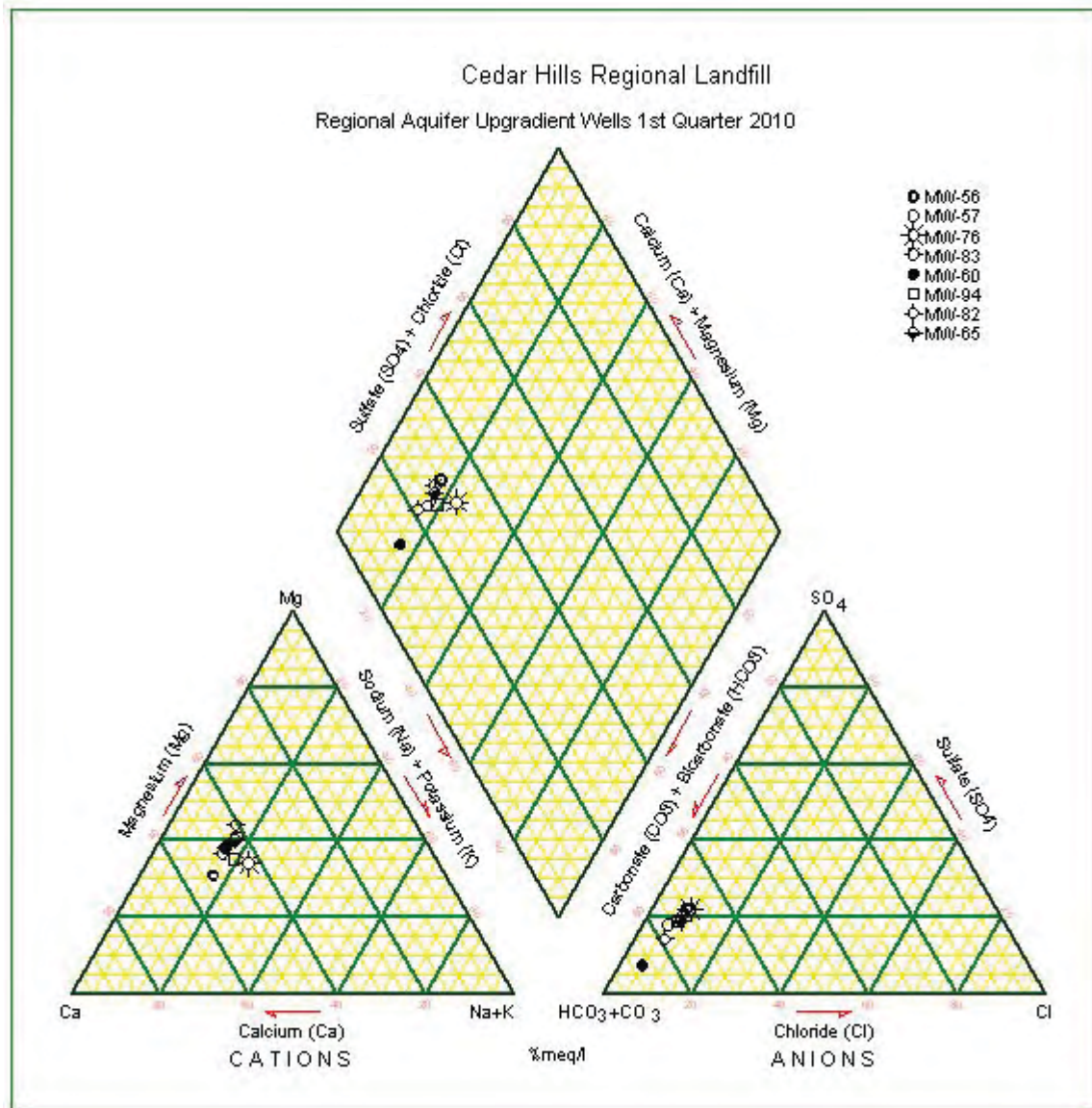
Regional Aquifer

North and West Perched Wells

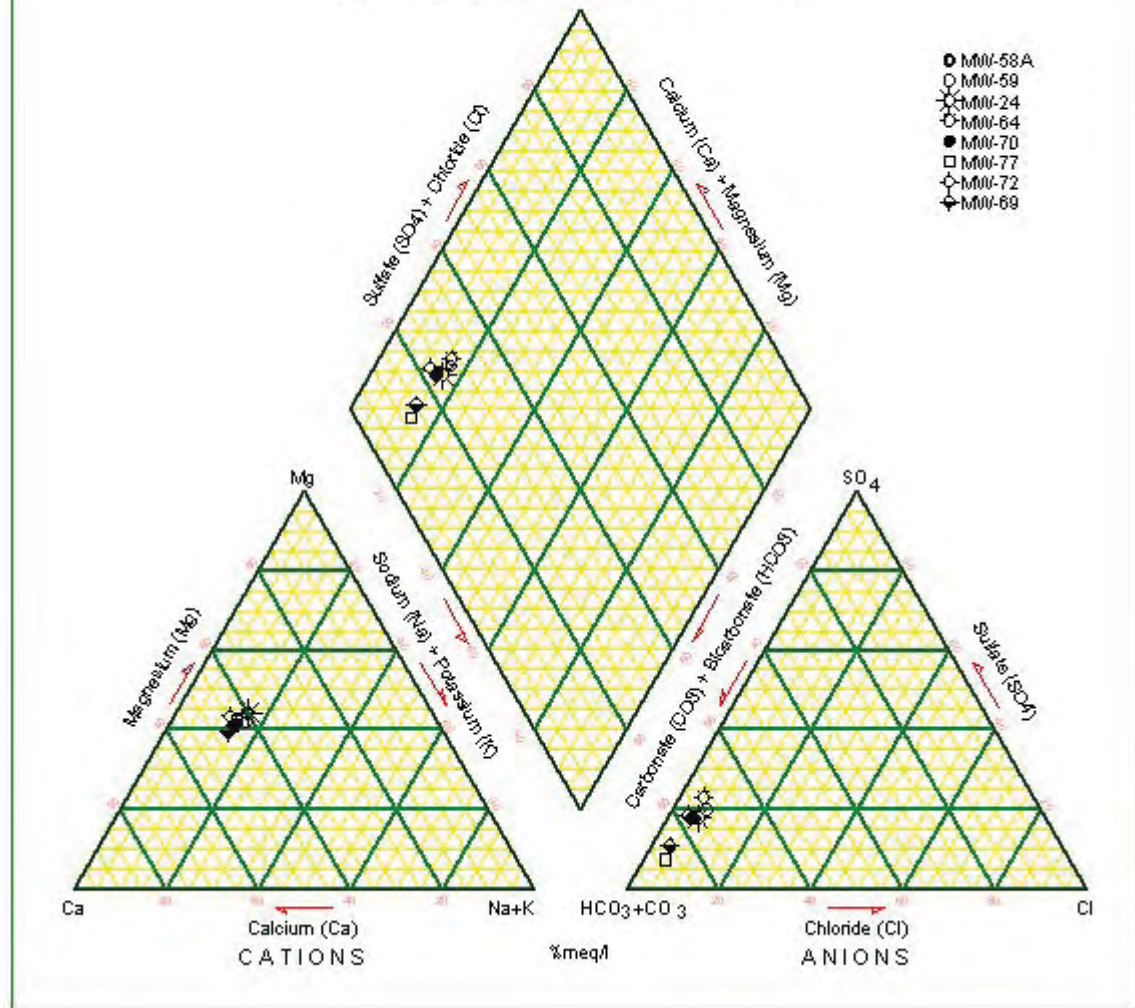
East Main Hill Perched Zone

South Solid Waste Area Perched Wells

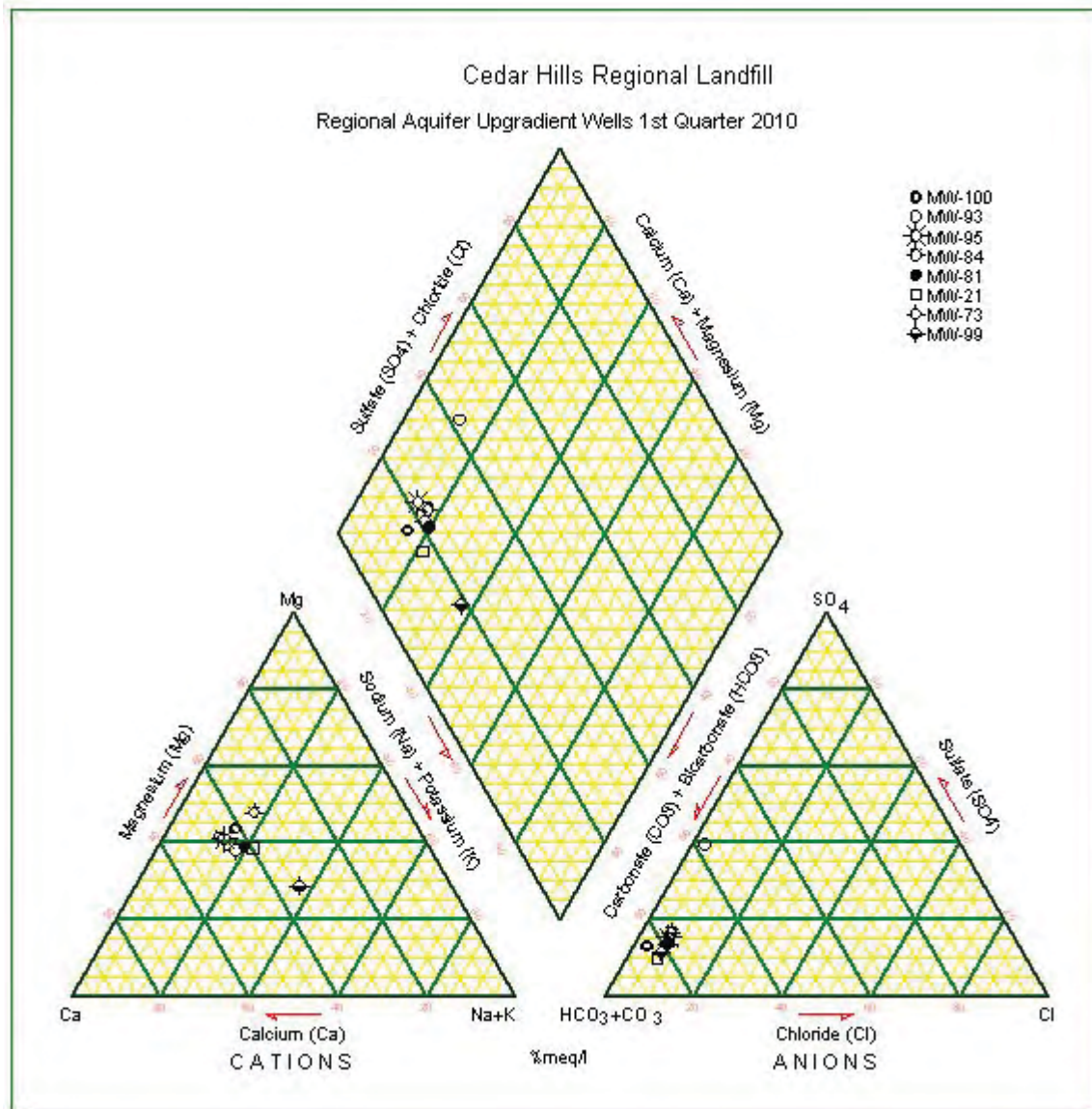
Cedar Hills Regional Landfill
Regional Aquifer Upgradient Wells 1st Quarter 2010



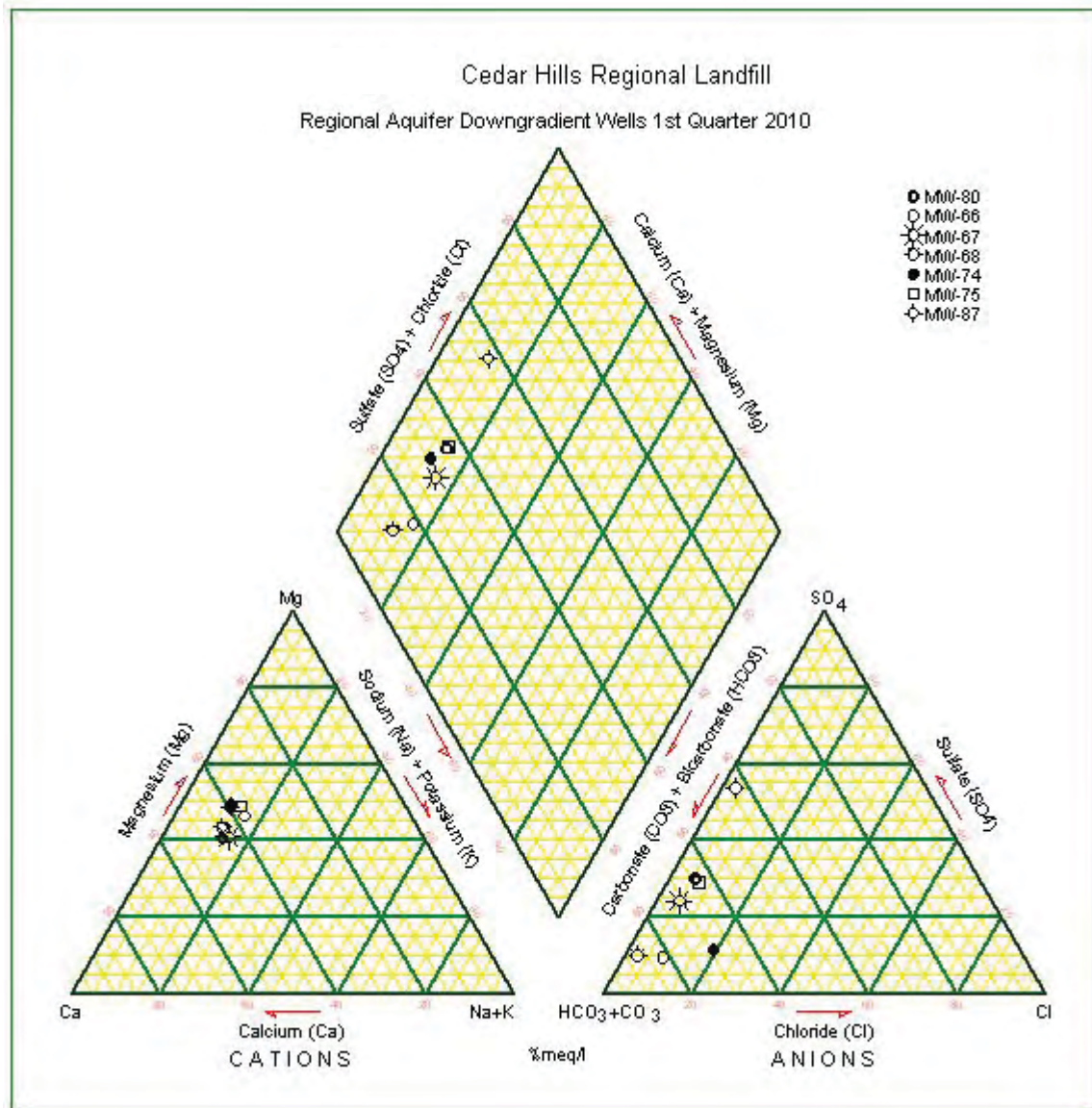
Cedar Hills Regional Landfill
Regional Aquifer Upgradient Wells 1st Quarter 2010



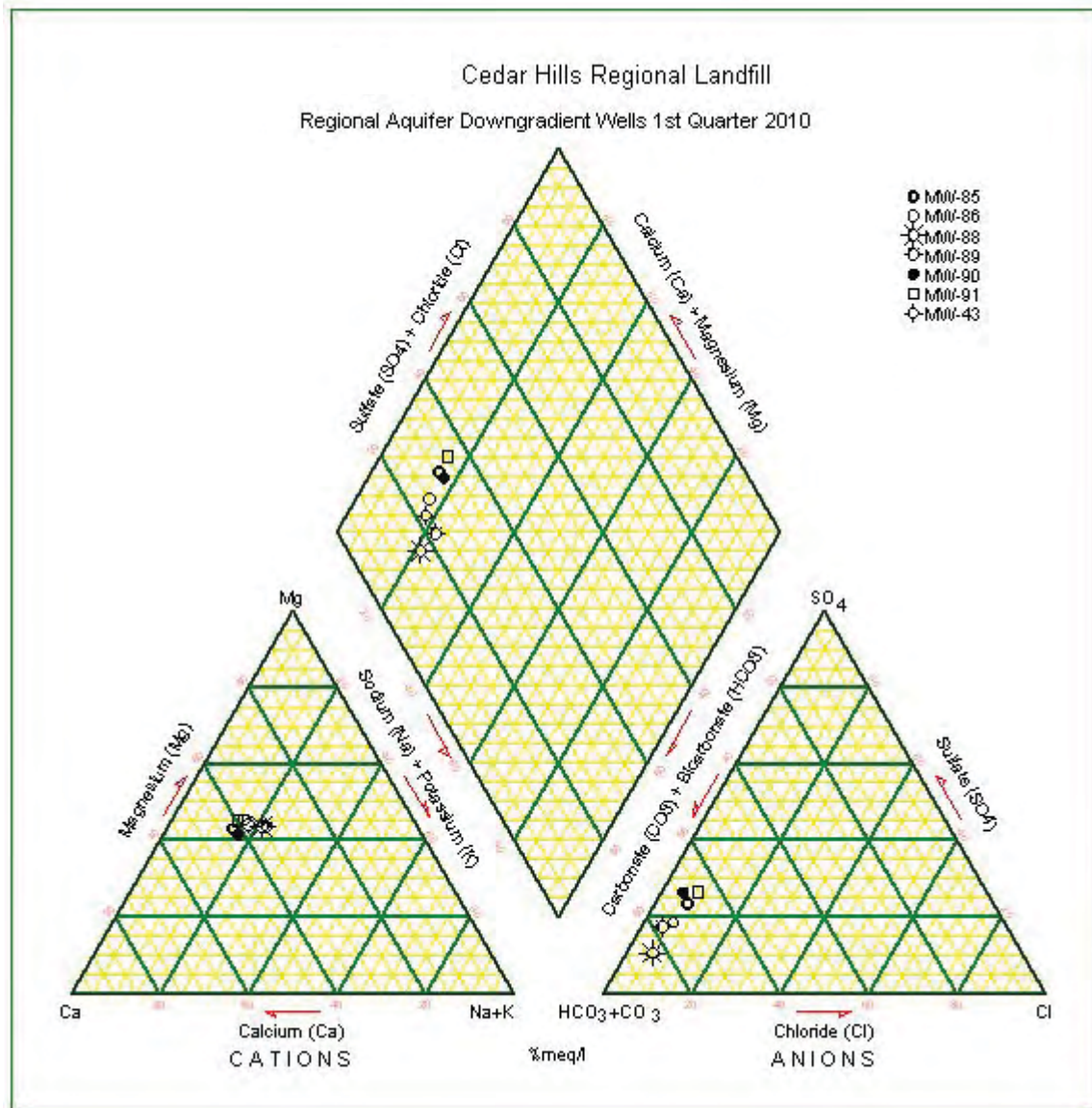
Cedar Hills Regional Landfill
Regional Aquifer Upgradient Wells 1st Quarter 2010



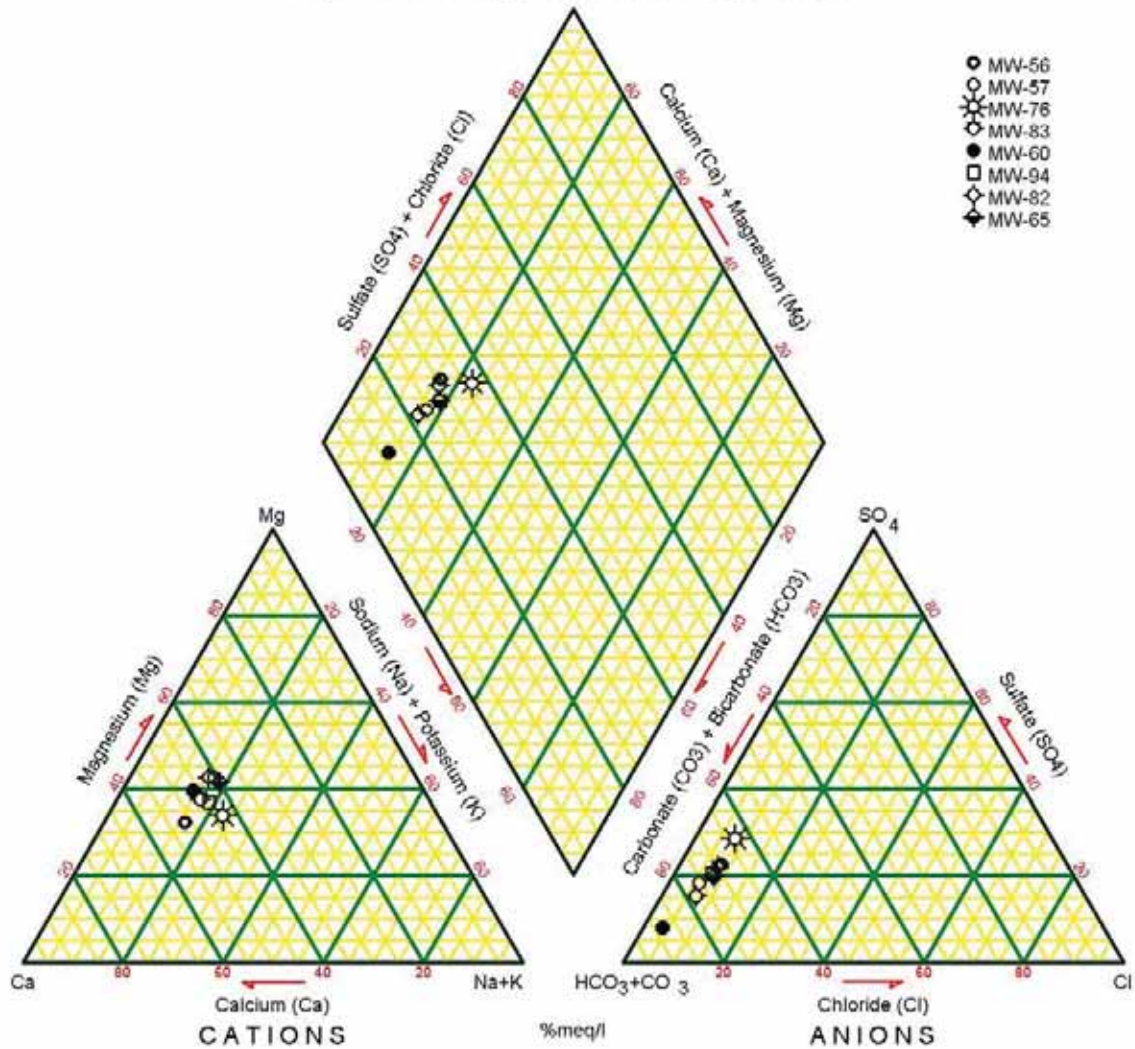
Cedar Hills Regional Landfill
Regional Aquifer Downgradient Wells 1st Quarter 2010



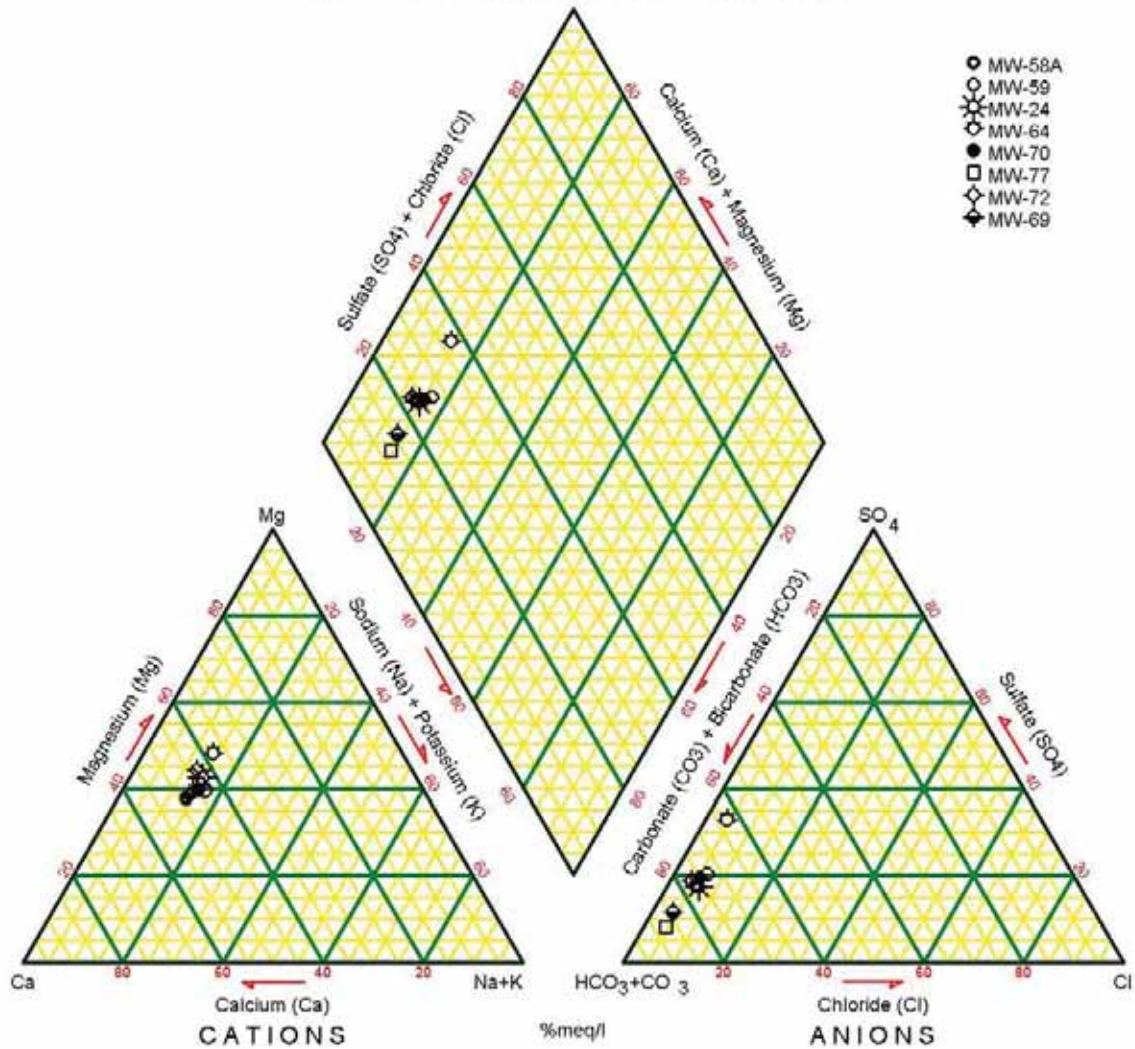
Cedar Hills Regional Landfill
Regional Aquifer Downgradient Wells 1st Quarter 2010



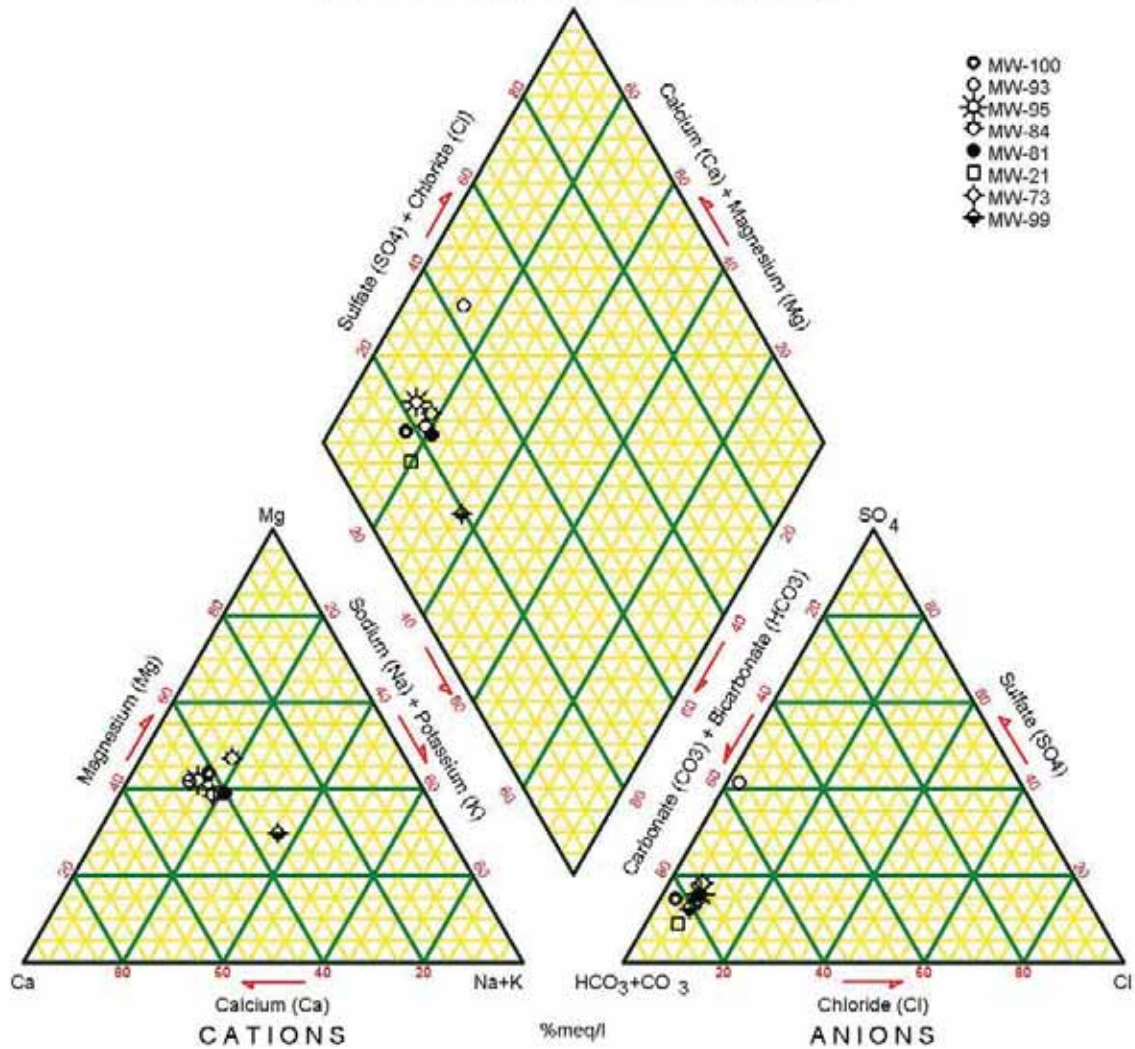
Cedar Hills Regional Landfill
Regional Aquifer Upgradient Wells 2nd Quarter 2010



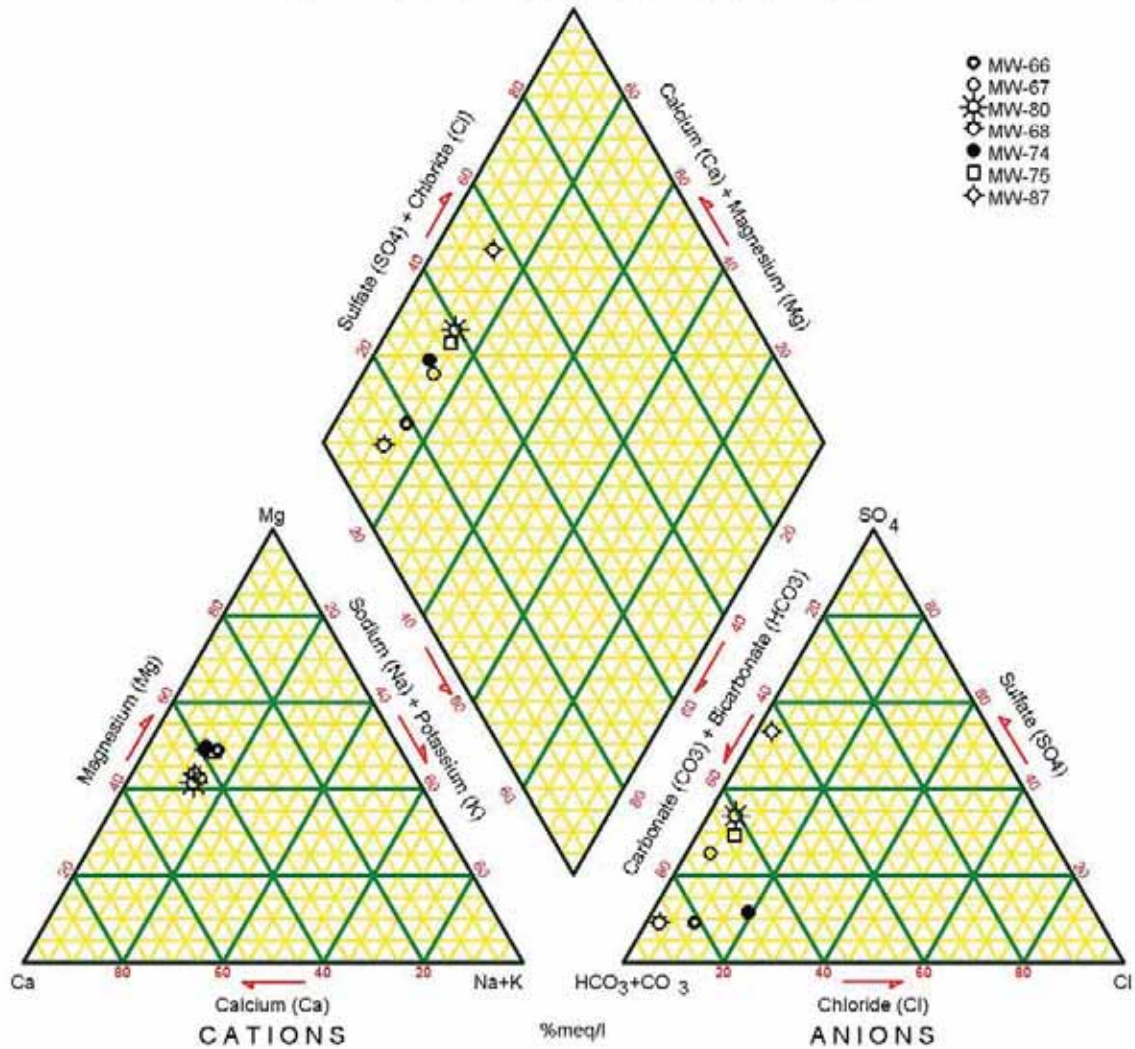
Cedar Hills Regional Landfill
Regional Aquifer Upgradient Wells 2nd Quarter 2010



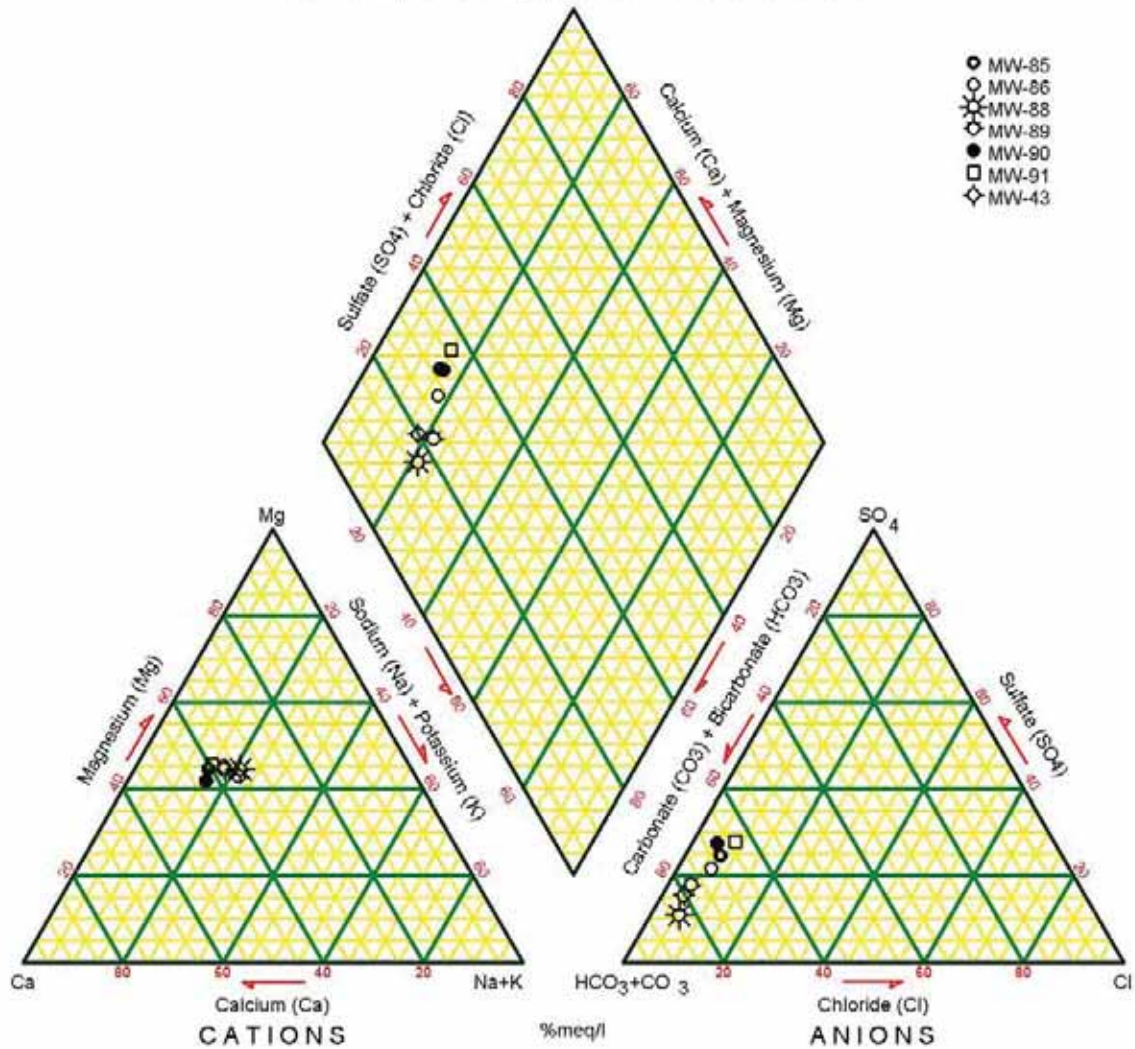
Cedar Hills Regional Landfill
Regional Aquifer Upgradient Wells 2nd Quarter 2010



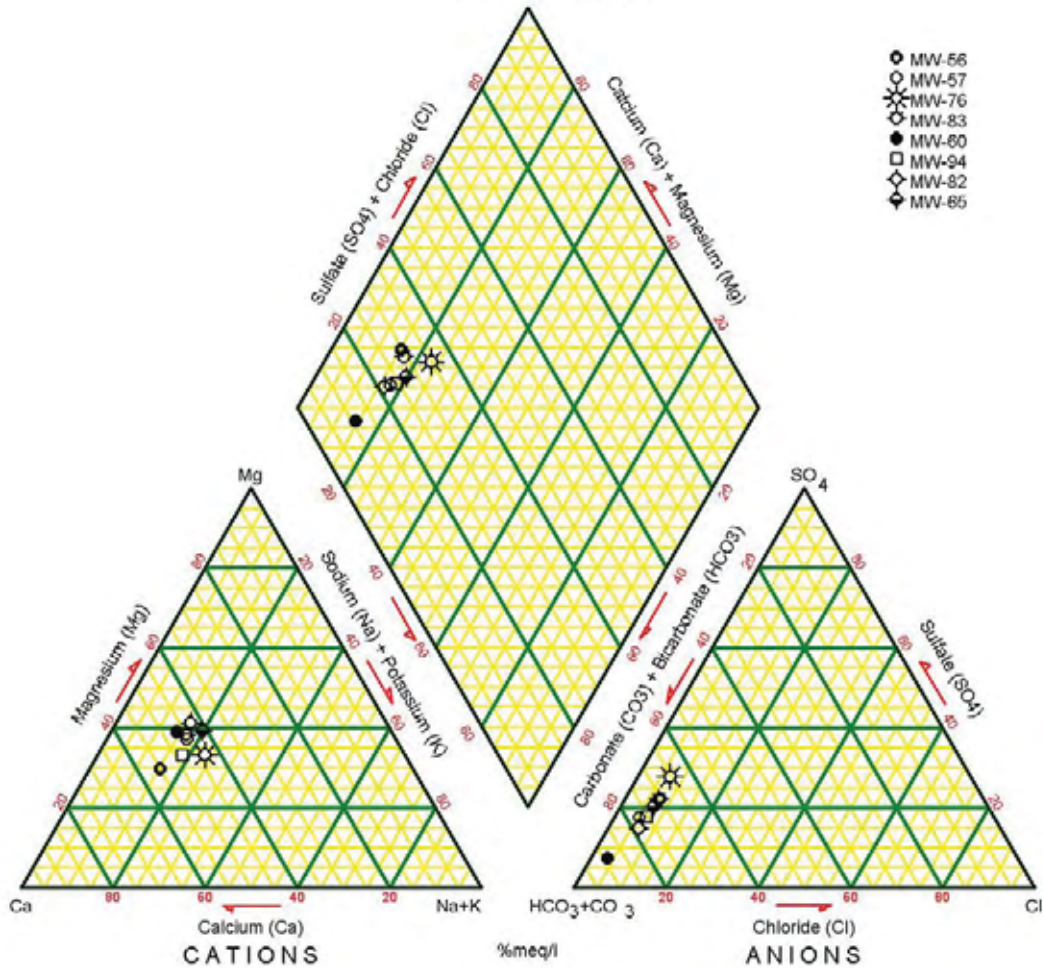
Cedar Hills Regional Landfill
Regional Aquifer Downgradient Wells 2nd Quarter 2010



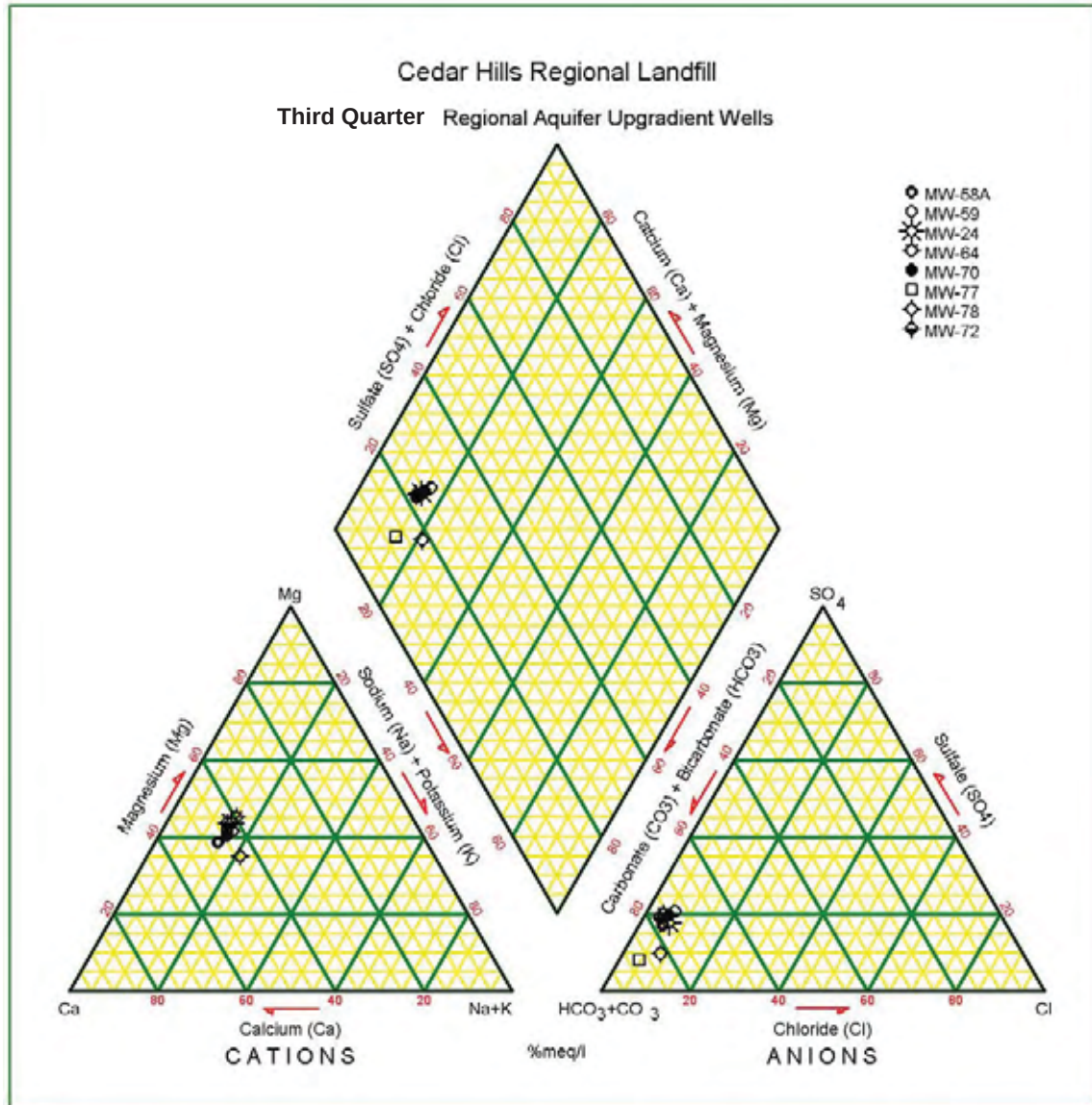
Cedar Hills Regional Landfill
Regional Aquifer Downgradient Wells 2nd Quarter 2010



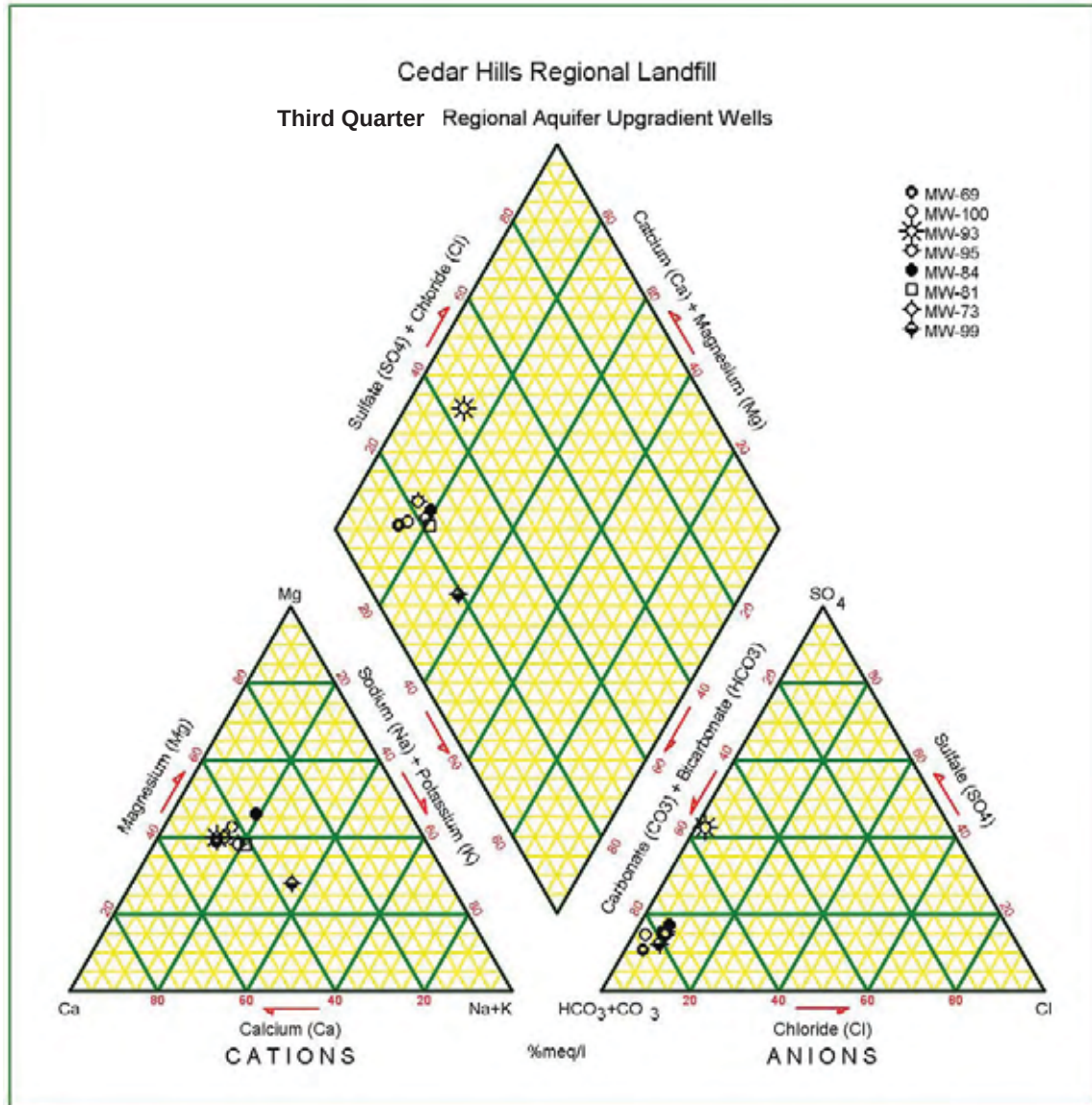
Cedar Hills Regional Landfill
Third Quarter Regional Aquifer Upgradient Wells



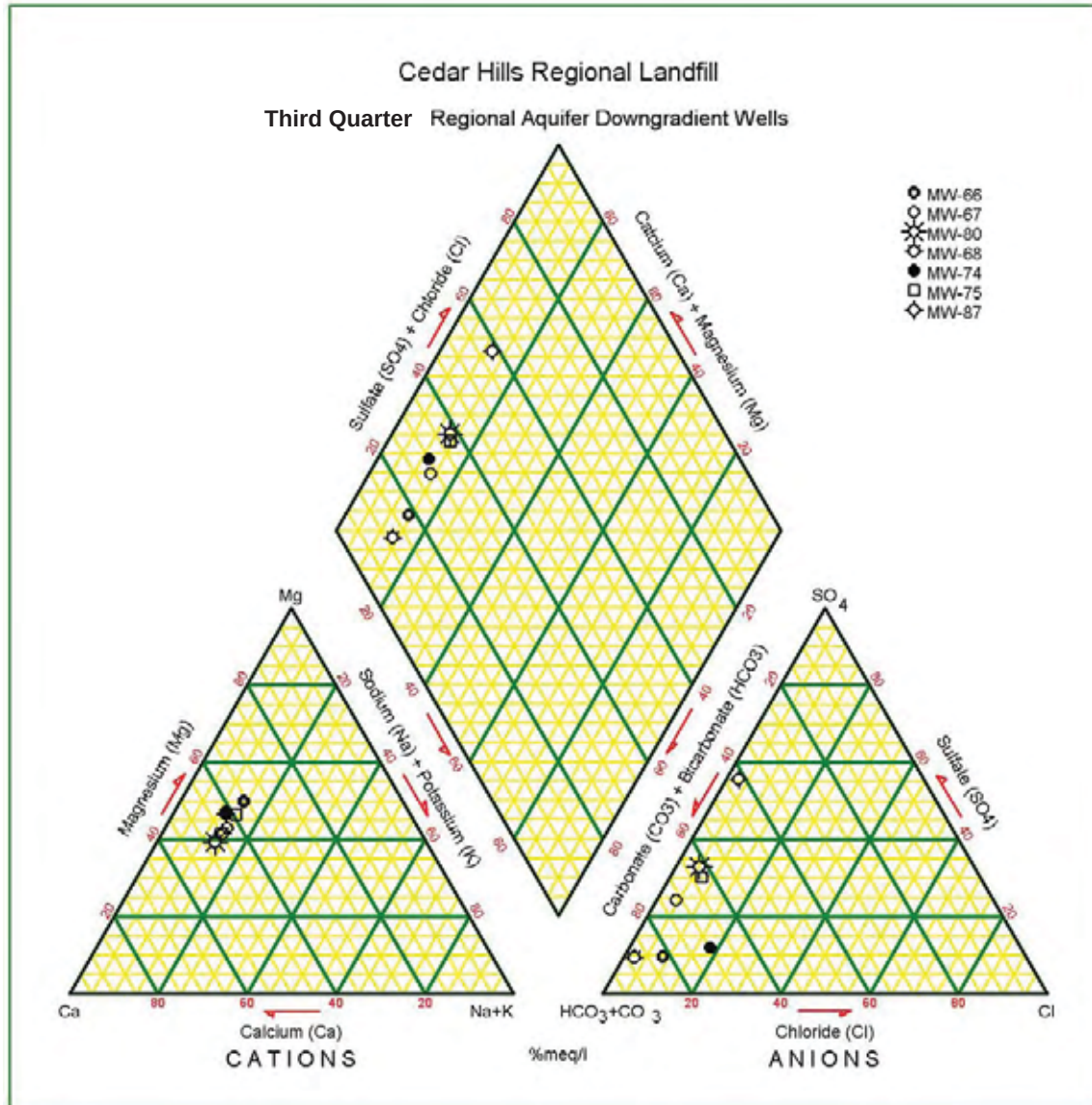
Cedar Hills Regional Landfill
Third Quarter Regional Aquifer Upgradient Wells



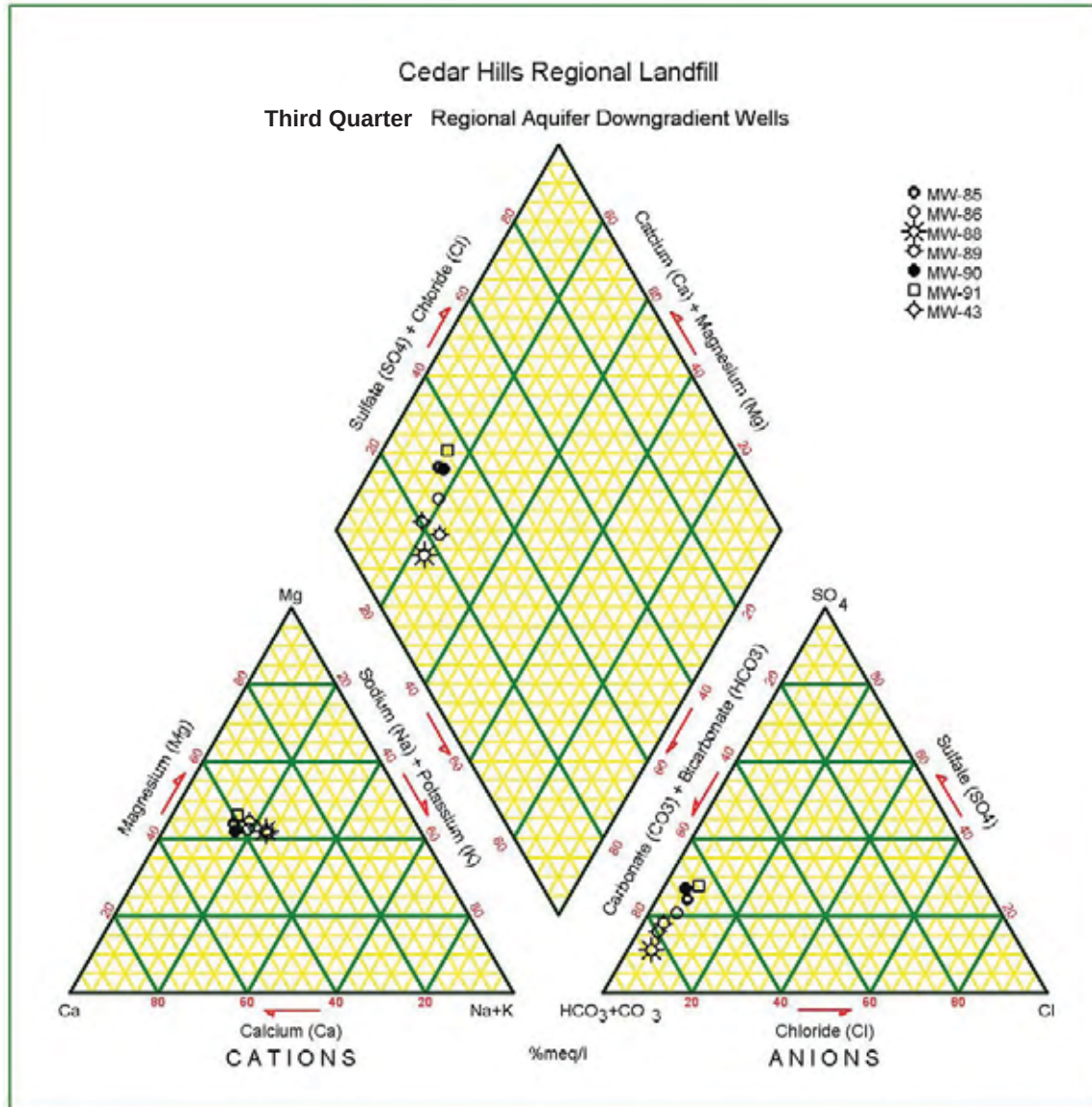
Cedar Hills Regional Landfill
Third Quarter Regional Aquifer Upgradient Wells



Cedar Hills Regional Landfill
Third Quarter Regional Aquifer Downgradient Wells

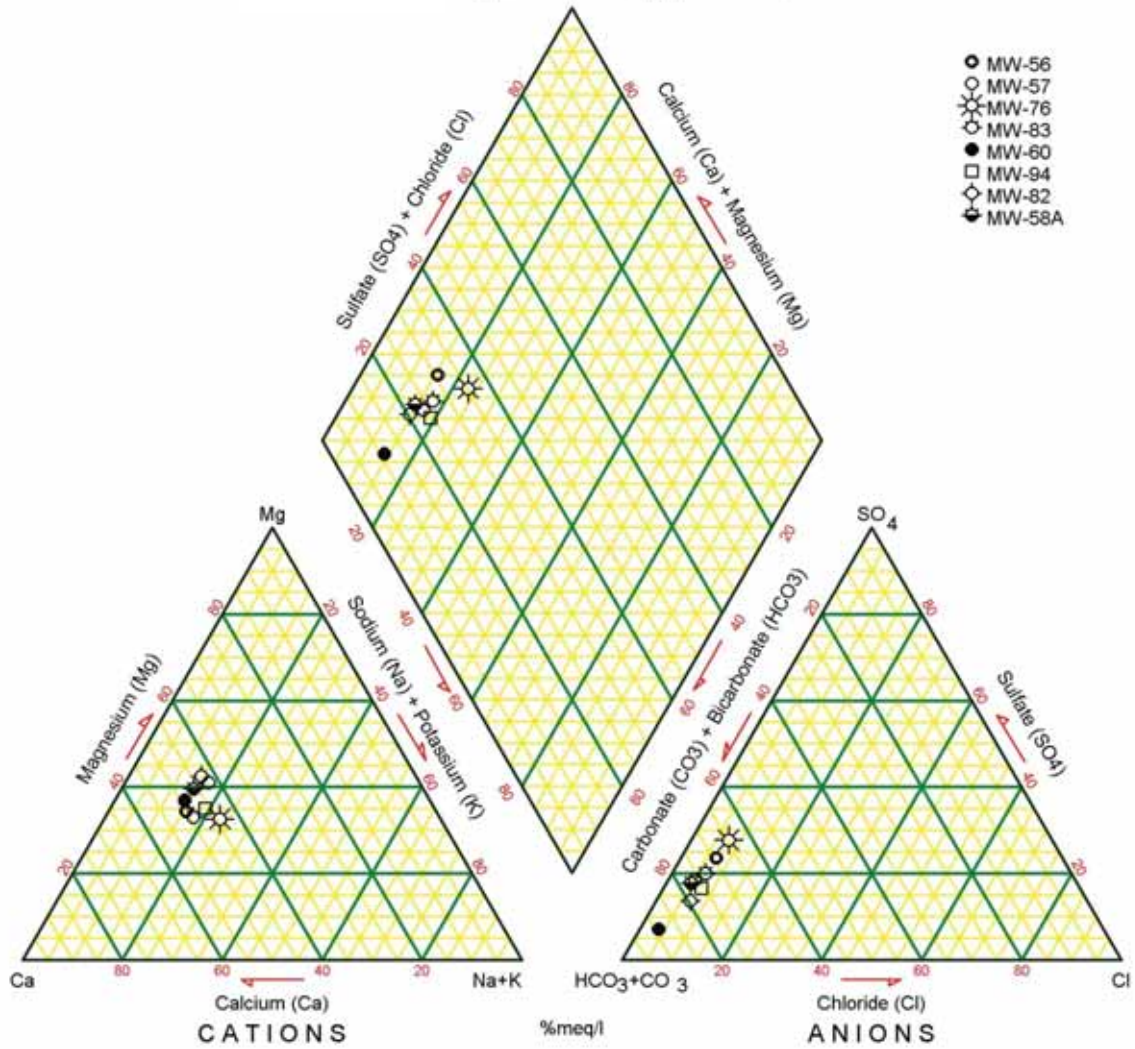


Cedar Hills Regional Landfill
Third Quarter Regional Aquifer Downgradient Wells

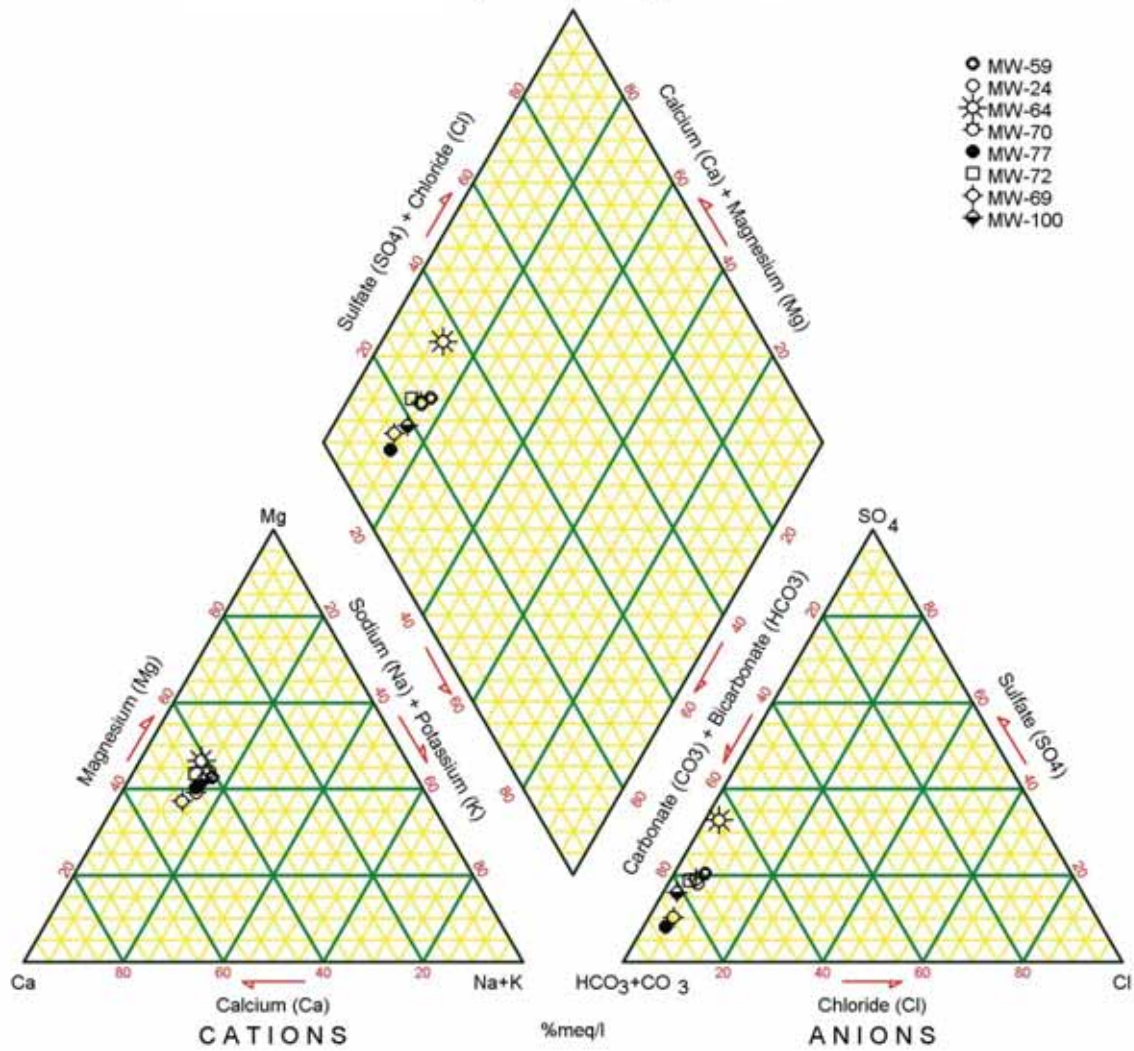


Cedar Hills Regional Landfill

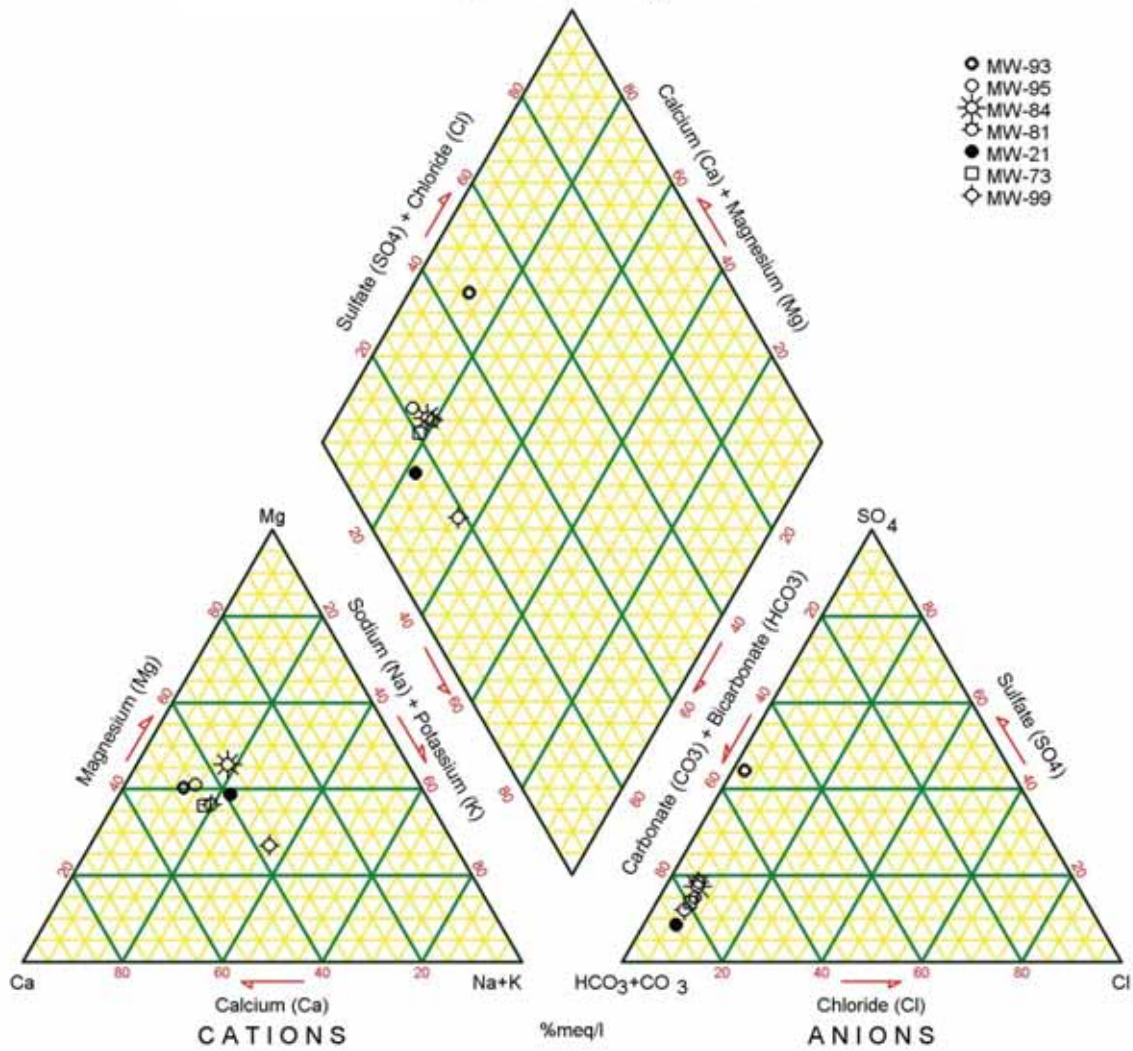
Fourth Quarter Regional Aquifer Upgradient Wells



Cedar Hills Regional Landfill
Fourth Quarter Regional Aquifer Upgradient Wells

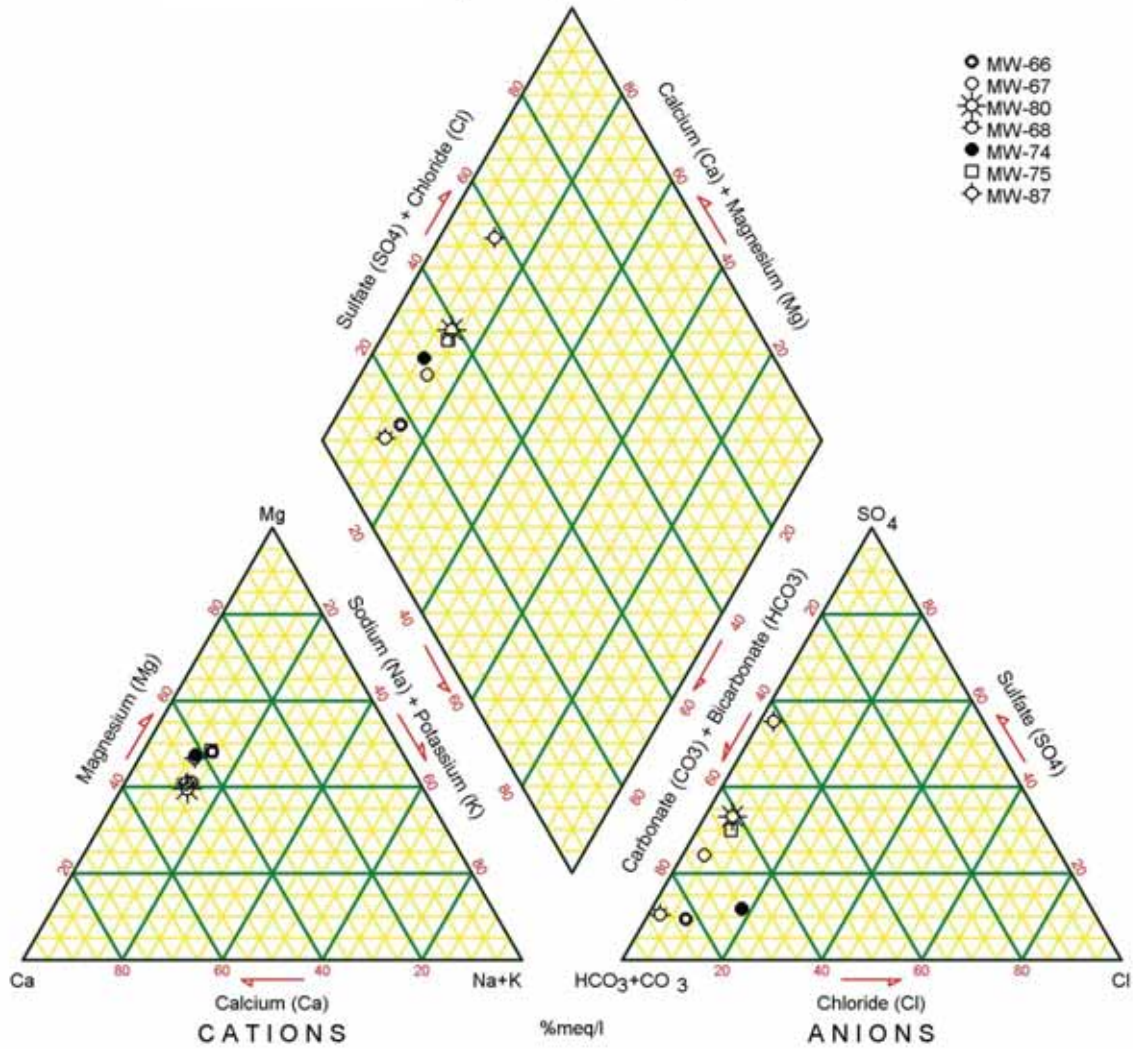


Cedar Hills Regional Landfill
Fourth Quarter Regional Aquifer Upgradient Wells



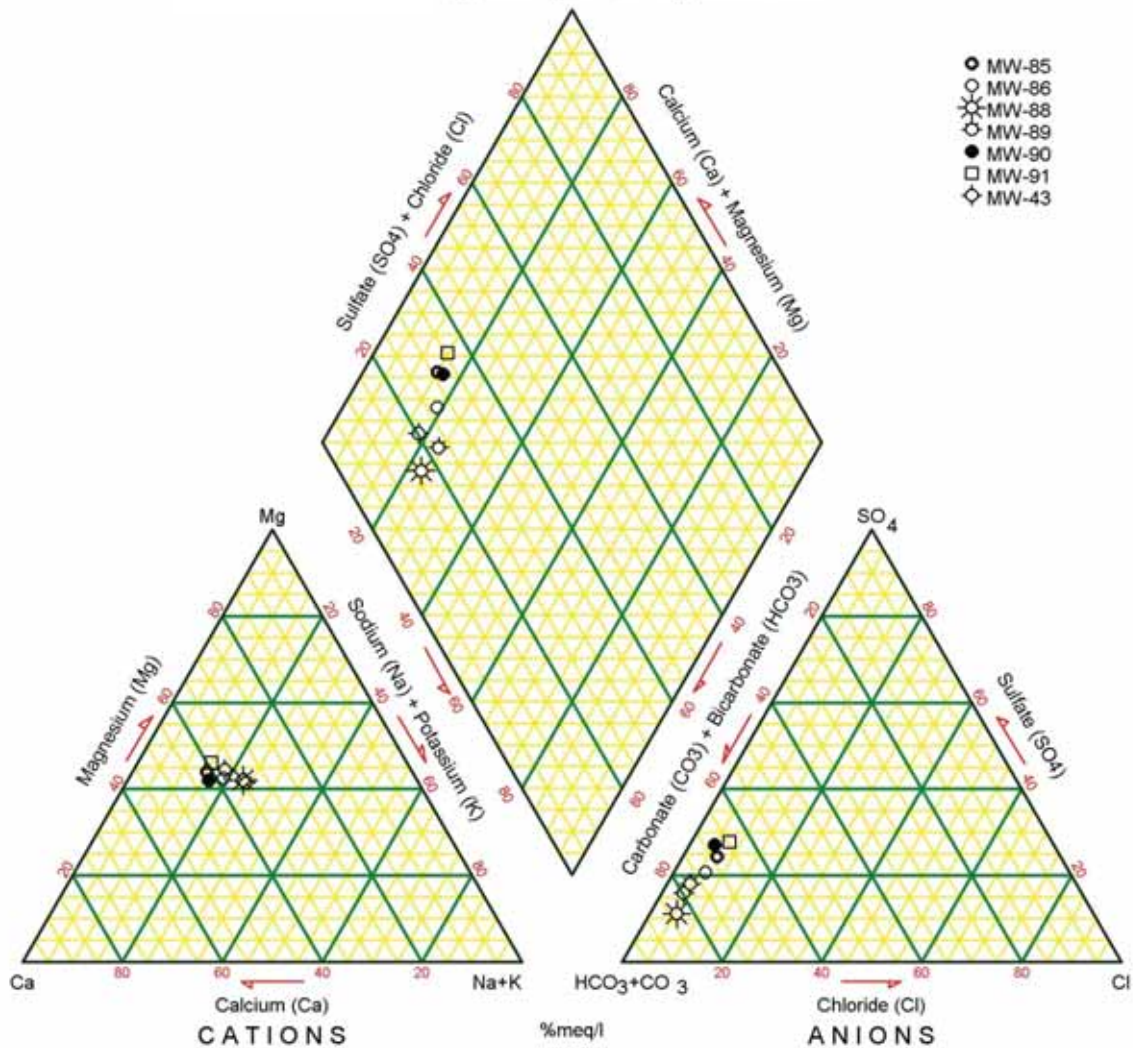
Cedar Hills Regional Landfill

Fourth Quarter Regional Aquifer Downgradient Wells



Cedar Hills Regional Landfill

Fourth Quarter Regional Aquifer Downgradient Wells



Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from December 1, 2009 to March 31, 2010

Site ID	MW-56			MW-57			MW-76			MW-83			MW-60			MW-94		
Date	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
Cations																		
Calcium	40.1	2	52.2	16.1	0.80339	36.6	12.4	0.61876	42.8	17.6	0.87824	47.4	16.0	0.7984	46.1	12.5	0.62375	45.6
Magnesium	24.3	2	30.8	9.5	0.7842	35.7	6.0	0.49126	34.0	8.2	0.6764	36.5	8.0	0.66077	38.1	5.9	0.48221	35.2
Potassium	39.1	1	1.9	0.9	0.02233	1.0	1.0	0.0266	1.8	1.7	0.04374	2.4	1.1	0.02762	1.6	1.4	0.03632	2.7
Sodium	23.0	1	14.6	6.9	0.30013	13.7	7.0	0.30492	21.1	5.8	0.25098	13.6	5.6	0.24489	14.1	5.2	0.22445	16.4
Iron	55.8	2	0.2	7.73	0.27683	12.6	0.05	0.00179	0.1	0.05	0.00179	0.1	0.04	0.00125	0.1	0.05	0.00179	0.1
Manganese	54.9	2	0.2	0.25	0.00921	0.4	0.00	3.9E-05	0.0	0.00	8.8E-05	0.0	0.00	3.9E-05	0.0	0.00	3.9E-05	0.0
Ammonia-N	14.0	1	0.1	0.02	0.00166	0.1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.1
Total Cations (meq/L)			1.3		2.2			1.4			1.9			1.7			1.4	
Anions																		
Alkalinity, Total		49			79			50			65			76			51	
Carbonate	60.0	2	0.0	0.0376	0.00125	0.1	0.0164	0.00055	0.0	0.0472	0.00157	0.1	0.0558	0.00186	0.1	0.0232	0.00078	0.1
Bicarbonate	61.0	1	67.2	96.06	1.57451	76.0	60.36	0.98931	64.5	79.57	1.30423	71.1	92.00	1.50791	82.5	62.17	1.01907	70.6
Chloride	35.5	1	7.5	4.2	0.11734	5.7	4.4	0.12439	8.1	4.9	0.13821	7.5	3.1	0.08659	4.7	3.6	0.10211	7.1
Nitrate-N	14.0	1	3.7	0.01	0.00071	0.0	1.45	0.10352	6.7	0.20	0.01399	0.8	1.39	0.09924	5.4	0.87	0.06218	4.3
Sulfate	96.1	2	21.6	18.1	0.37686	18.2	15.2	0.31648	20.6	18.1	0.37686	20.5	6.3	0.1318	7.2	12.5	0.26026	18.0
Total Anions (meq/L)			1.4		2.1			1.5			1.8			1.8			1.4	
Total Ions (meq/L)			2.7		4.3			3.0			3.7			3.6			2.8	
Cation/Anion Ratio			0.87		1.06			0.94			1.01			0.95			0.95	
Percent Difference			-7.2		3.0			-3.0			0.5			-2.6			-2.7	
TRILINEAR DIAGRAM DATA																		
sum (Ca, Mg, Na+K)		1.25			1.91			1.44			1.85			1.73			1.37	
Calcium		52.49			42.06			42.92			47.49			46.11			45.64	
Magnesium		30.99			41.06			34.08			36.57			38.16			35.28	
Sodium + Potassium		16.53			16.88			23.00			15.94			15.74			19.08	
sum (SO ₄ , Cl, HCO ₃ +CO ₃)		1.39			2.07			1.43			1.82			1.73			1.38	
Sulfate		22.438			18.206			22.120			20.697			7.626			18.829	
Chloride		7.741			5.669			8.694			7.590			5.011			7.387	
Bicarbonate + Carbonate		69.821			76.125			69.186			71.713			87.363			73.784	

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from December 1, 2009 to March 31, 2010

Site ID	MW-82	MW-65	MW-58A	MW-59	MW-24	MW-64
Date	1/15/10	3/30/10	1/14/10	1/6/10	1/7/10	1/12/10
Cations	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)
Calcium	40.1 2 15.3 0.76347 40.8	11.9 0.59381 38.7	16.2 0.80838 43.4	12.9 0.64371 38.1	15.2 0.75848 37.0	15.7 0.78343 39.8
Magnesium	24.3 2 10.0 0.82288 44.0	6.8 0.55791 36.4	9.0 0.74223 39.9	7.9 0.65007 38.5	10.3 0.84756 41.4	10.4 0.85579 43.5
Potassium	39.1 1 1.4 0.03478 1.9	0.9 0.02407 1.6	0.9 0.02407 1.3	1.0 0.02517 1.5	0.9 0.02409 1.2	1.3 0.03274 1.7
Sodium	23.0 1 5.7 0.24794 13.2	4.8 0.20835 13.6	5.4 0.23358 12.5	5.2 0.22706 13.4	6.4 0.27708 13.5	6.2 0.27012 13.7
Iron	55.8 2 0.05 0.00179 0.1	3.97 0.14217 9.3	1.01 0.03617 1.9	3.91 0.14003 8.3	3.70 0.1325 6.5	0.48 0.0173 0.9
Manganese	54.9 2 0.00 3.9E-05 0.0	0.20 0.00735 0.5	0.34 0.01227 0.7	0.09 0.00337 0.2	0.15 0.0055 0.3	0.09 0.00326 0.2
Ammonia-N	14.0 1 0.01 0.00071 0.0	0.01 0.00071 0.0	0.07 0.00496 0.3	0.01 0.00071 0.0	0.04 0.00306 0.1	0.05 0.00356 0.2
Total Cations (meq/L)	1.9	1.5	1.9	1.7	2.0	2.0
Anions	76	54	74	59	75	75
Alkalinity, Total						
Carbonate	60.0 2 0.0331 0.0011 0.1	0.0274 0.00091 0.1	0.1929 0.00643 0.3	0.0213 0.00071 0.0	0.0283 0.00094 0.0	0.1186 0.00395 0.2
Bicarbonate	61.0 1 92.65 1.51867 76.6	65.34 1.07092 72.8	89.64 1.46935 76.0	71.81 1.17711 72.6	91.08 1.49283 75.4	91.50 1.49982 71.5
Chloride	35.5 1 4.6 0.12947 6.5	4.2 0.11762 8.0	3.9 0.11057 5.7	4.2 0.11875 7.3	4.6 0.12862 6.5	3.8 0.10634 5.1
Nitrate-N	14.0 1 0.81 0.05761 2.9	0.01 0.00071 0.0	0.01 0.00071 0.0	0.02 0.00107 0.1	0.01 0.00071 0.0	0.02 0.00107 0.1
Sulfate	96.1 2 13.3 0.27692 14.0	13.5 0.28108 19.1	16.6 0.34563 17.9	15.6 0.32481 20.0	17.1 0.35604 18.0	23.4 0.48721 23.2
Total Anions (meq/L)	2.0	1.5	1.9	1.6	2.0	2.1
Total Ions (meq/L)	3.9	3.0	3.8	3.3	4.0	4.1
Cation/Anion Ratio	0.94	1.04	0.96	1.04	1.03	0.94
Percent Difference	-2.9	2.1	-1.9	2.0	1.7	-3.3
TRILINEAR DIAGRAM DATA						
sum (Ca, Mg, Na+K)	1.87	1.38	1.81	1.55	1.91	1.94
Calcium	40.85	42.90	44.70	41.64	39.77	40.34
Magnesium	44.03	40.31	41.05	42.05	44.44	44.07
Sodium + Potassium	15.13	16.79	14.25	16.31	15.79	15.59
sum (SO ₄ , Cl, HCO ₃ +CO ₃)						100.0
Sulfate	1.93	1.47	1.93	1.62	1.98	2.10
Chloride	14.377	19.114	17.890	20.033	17.996	23.230
Bicarbonate + Carbonate	6.722	7.998	5.723	7.324	6.501	5.070
	78.902	72.887	76.387	72.643	75.503	71.700

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from December 1, 2009 to March 31, 2010

Site ID	Date	MW-70		MW-77		MW-72		MW-69		MW-100		MW-93	
		mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Cations	MW	1/15/10		1/22/10		2/1/10		2/4/10		2/3/10		1/21/10	
Calcium	40.1	2	44.0	2	43.2	2	43.2	2	45.8	2	40.0	2	45.7
Magnesium	24.3	2	41.5	2	42.3	2	42.4	2	39.0	2	42.7	2	41.3
Potassium	39.1	1	1.8	1	1.3	1	1.5	1	1.4	1	1.6	1	1.1
Sodium	23.0	1	12.5	1	13.0	1	10.5	1	12.0	1	13.2	1	11.4
Iron	55.8	2	0.1	2	0.1	2	2.1	2	1.5	2	2.4	2	0.1
Manganese	54.9	2	0.1	2	0.0	2	0.3	2	0.2	2	0.2	2	0.3
Ammonia-N	14.0	1	0.0	1	0.0	1	0.0	1	0.0	1	0.0	1	0.1
Total Cations (meq/L)		2.0		3.0		2.7		2.8		3.1		3.3	
Anions													
Alkalinity, Total		79		133		109		122		132		100	
Carbonate	60.0	2	0.3	2	0.1	2	0.1	2	0.1	2	0.0	2	0.1
Bicarbonate	61.0	1	76.4	1	85.5	1	77.2	1	85.0	1	83.8	1	57.6
Chloride	35.5	1	5.1	1	4.6	1	4.0	1	3.9	1	2.9	1	2.7
Nitrate-N	14.0	1	0.2	1	2.4	1	0.0	1	0.0	1	0.0	1	0.0
Sulfate	96.1	2	18.0	2	7.4	2	18.7	2	11.0	2	13.3	2	39.6
Total Anions (meq/L)		2.1		3.1		2.8		2.9		3.1		3.5	
Total Ions (meq/L)		4.0		6.1		5.6		5.7		6.3		6.8	
Cation/Anion Ratio		0.96		0.95		0.97		0.97		0.99		0.97	
Percent Difference		-2.1		-2.5		-1.5		-1.4		-0.4		-1.8	
TRILINEAR DIAGRAM DATA													
sum (Ca, Mg, Na+K)		1.97		2.95		2.67		2.74		3.04		3.33	
Calcium		44.11		43.29		44.30		46.63		41.02		45.89	
Magnesium		41.55		42.38		43.46		39.65		43.84		41.55	
Sodium + Potassium		14.34		14.33		12.23		13.72		15.14		12.57	
		100.0		100.0									
sum (SO ₄ , Cl, HCO ₃ +CO ₃)		2.05		3.03		2.82		2.86		3.15		3.46	
Sulfate		18.054		7.555		18.690		10.975		13.293		39.570	
Chloride		5.084		4.708		3.973		3.860		2.867		2.672	
Bicarbonate + Carbonate		76.861		87.736		77.337		85.165		83.841		57.758	

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from December 1, 2009 to March 31, 2010

Site ID	Date	MW	n	MW-95		MW-84		MW-81		MW-21		MW-73		MW-99	
				mg/L	%(meq)	mg/L	%(meq)	mg/L	%(meq)	mg/L	%(meq)	mg/L	%(meq)	mg/L	%(meq)
Cations															
Calcium	40.1	2		19.2	0.95808	44.9	34.8	9.6	0.47655	41.4	37.3	14.0	0.6986	8.5	0.42216
Magnesium	24.3	2		10.6	0.87225	40.9	47.8	5.4	0.44764	38.9	36.3	7.4	0.60728	4.3	0.35466
Potassium	39.1	1		1.2	0.02941	1.4	1.6	0.6	0.01517	1.3	2.0	0.9	0.02177	0.8	0.02136
Sodium	23.0	1		6.1	0.26534	12.4	15.5	4.8	0.20792	18.1	18.0	6.0	0.26273	9.9	0.43237
Iron	55.8	2		0.05	0.00179	0.1	0.1	0.05	0.00179	0.2	6.1	0.05	0.00179	0.1	0.00097
Manganese	54.9	2		0.13	0.00462	0.2	0.0	0.00	3.6E-05	0.0	0.2	0.00	3.6E-05	0.0	0.00217
Ammonia-N	14.0	1		0.02	0.00143	0.1	0.0	0.01	0.00071	0.1	0.1	0.01	0.00071	0.0	0.00427
Total Cations (meq/L)				2.1		1.6		1.1		1.2		1.6		1.2	
Anions															
Alkalinity, Total				88		58		50		50		57		54	
Carbonate	60.0	2		0.0876	0.00292	0.1	0.0	0.0622	0.00207	0.2	0.2	0.0411	0.00137	0.1	0.1983
Bicarbonate	61.0	1		107.06	1.75482	77.7	74.7	60.39	0.98978	72.2	82.9	69.33	1.13646	72.0	65.23
Chloride	35.5	1		5.4	0.1509	6.7	6.5	3.2	0.08998	6.6	7.0	3.8	0.1069	6.8	3.2
Nitrate-N	14.0	1		0.01	0.00071	0.0	2.5	1.57	0.11209	8.2	0.1	1.89	0.13493	8.5	0.02
Sulfate	96.1	2		16.7	0.34771	15.4	16.2	8.5	0.17719	12.9	9.9	9.5	0.19863	12.6	7.4
Total Anions (meq/L)				2.3		1.6		1.4		1.2		1.6		1.3	
Total Ions (meq/L)				4.4		3.1		2.5		2.4		3.2		2.6	
Cation/Anion Ratio				0.94		1.01		0.84		0.99		1.01		0.94	
Percent Difference				-2.8		0.7		-8.8		-0.7		0.5		-3.3	
TRILINEAR DIAGRAM DATA															
sum (Ca, Mg, Na+K)				2.13		1.57		1.15		1.10		1.59		1.23	
Calcium				45.08		34.91		41.54		39.81		43.93		34.31	
Magnesium				41.05		47.94		39.02		38.76		38.18		28.82	
Sodium + Potassium				13.87		17.16		19.44		21.42		17.89		36.87	
sum (SO ₄ , Cl, HCO ₃ +CO ₃)				2.26		1.51		1.26		1.19		1.44		1.32	
Sulfate				15.410		16.654		14.073		9.877		13.762		11.680	
Chloride				6.688		6.675		7.147		6.997		7.406		6.876	
Bicarbonate + Carbonate				77.902		76.671		78.780		83.126		78.832		81.445	

Table 3

**Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Downgradient GW Monitoring Wells**

Data Collected from December 1, 2009 to March 31, 2010

Site ID	MW-80	MW-66	MW-67	MW-68	MW-74
Date	2/8/10	1/11/10	1/8/10	2/5/10	1/19/10
Cations	mg/L	mg/L	mg/L	mg/L	mg/L
Calcium	22.7	18.0	23.7	30.5	35.7
Magnesium	12.3	13.5	13.4	18.2	27.0
Potassium	1.4	1.2	1.4	1.6	2.1
Sodium	7.1	8.1	8.5	8.8	10.7
Iron	1.3	0.1	0.1	1.5	2.6
Manganese	0.2	0.0	0.1	0.3	0.1
Ammonia-N	0.0	0.0	0.0	0.0	0.0
Total Cations (meq/L)	2.5	2.4	2.7	3.5	4.6
Anions	mg/L	mg/L	mg/L	mg/L	mg/L
Alkalinity, Total	82	104	97.5	158	163
Carbonate	0.0501	0.1217	0.0465	0.0971	0.0935
Bicarbonate	99.33	126.63	118.86	192.56	198.67
Chloride	5.1	7.9	5.0	3.6	31.9
Nitrate-N	0.0	0.4	0.7	0.0	0.0
Sulfate	36.6	11.6	32.3	17.5	26.1
Total Anions (meq/L)	2.5	2.6	2.8	3.6	4.7
Total Ions (meq/L)	5.1	5.0	5.5	7.1	9.3
Cation/Anion Ratio	1.00	0.93	0.96	0.97	0.98
Percent Difference	0.1	-3.6	-2.1	-1.7	-0.9
TRILINEAR DIAGRAM DATA					
sum (Ca, Mg, Na+K)	2.49	2.39	2.69	3.44	4.52
Calcium	45.53	37.55	43.93	44.22	39.40
Magnesium	40.68	46.44	40.96	43.51	49.13
Sodium + Potassium	13.78	16.00	15.10	12.27	11.47
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	2.54	2.54	2.76	3.62	4.70
Sulfate	30.053	9.492	24.350	10.052	11.556
Chloride	5.673	8.779	5.055	2.786	19.133
Bicarbonate + Carbonate	64.274	81.729	70.594	87.162	69.311
		100.0	100.0		

Table 3

**Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Downgradient GW Monitoring Wells**

Data Collected from December 1, 2009 to March 31, 2010

Site ID	MW-75	MW-87	MW-85	MW-86	MW-88
Date	1/22/10	1/19/10	1/29/10	1/29/10	2/8/10
Cations	mg/L	mg/L	mg/L	mg/L	mg/L
Calcium	21.6	31.4	20.1	14.6	8.6
Magnesium	17.2	23.4	12.5	10.6	6.5
Potassium	1.7	2.0	1.4	1.2	0.8
Sodium	8.2	9.3	7.4	6.6	5.5
Iron	1.5	3.0	0.1	0.3	0.1
Manganese	0.1	0.3	0.0	0.0	0.0
Ammonia-N	0.0	0.0	0.0	0.0	0.0
Total Cations (meq/L)	3.0	4.1	2.4	1.9	1.2
Anions	mg/L	mg/L	mg/L	mg/L	mg/L
Alkalinity, Total	96.2	91.5	82.9	67.2	53.9
Carbonate	6E-09	0.0525	0.0	0.0157	0.0276
Bicarbonate	117.36	111.52	101.08	81.95	65.70
Chloride	7.5	4.5	6.2	4.1	2.6
Nitrate-N	0.0	0.0	0.1	0.3	0.5
Sulfate	42.4	109.0	27.2	16.2	6.7
Total Anions (meq/L)	3.0	4.2	2.4	1.8	1.3
Total Ions (meq/L)	6.0	8.3	4.8	3.7	2.6
Cation/Anion Ratio	0.98	0.96	0.99	1.06	0.93
Percent Difference	-1.1	-1.9	-0.3	3	-3.9
TRILINEAR DIAGRAM DATA					
sum (Ca, Mg, Na+K)	2.89	3.95	2.39	1.92	1.22
Calcium	37.24	39.71	41.96	38.04	35.07
Magnesium	48.90	48.80	43.03	45.54	43.71
Sodium + Potassium	13.86	11.49	15.01	16.42	21.21
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	3.02	4.23	2.40	1.80	1.29
Sulfate	29.251	53.712	23.602	18.773	10.746
Chloride	7.009	2.984	7.312	6.436	5.727
Bicarbonate + Carbonate	63.740	43.304	69.087	74.791	83.527

Table 3

**Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Downgradient GW Monitoring Wells**

Data Collected from December 1, 2009 to March 31, 2010

Site ID	MW-89 1/7/10			MW-90 1/8/10			MW-91 1/8/10			MW-43 1/5/10		
Date												
Cations	MW	n		mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)
Calcium	40.1	2		13.2	0.65868	33.5	16.2	0.80838	40.5	19.5	0.97305	38.3
Magnesium	24.3	2		10.2	0.83933	42.7	9.8	0.80642	40.4	13.5	1.11088	43.7
Potassium	39.1	1		1.5	0.03734	1.9	1.3	0.03402	1.7	1.6	0.04041	1.6
Sodium	23.0	1		9.1	0.39409	20.0	6.8	0.29404	14.7	7.5	0.32754	12.9
Iron	55.8	2		0.7	0.02546	1.3	1.1	0.03832	1.9	2.2	0.07843	3.1
Manganese	54.9	2		0.3	0.01008	0.5	0.3	0.00957	0.5	0.2	0.00837	0.3
Ammonia-N	14.0	1		0.0	0.00153	0.1	0.1	0.00388	0.2	0.0	0.00121	0.0
Total Cations (meq/L)					2.0						2.5	
Anions												1.6
Alkalinity, Total				78.5			72.1			82.9		
Carbonate	60.0	2		0.1297	0.00432	0.2	0.0558	0.00186	0.1	0.0396	0.00132	0.1
Bicarbonate	61.0	1		95.51	1.56544	77.5	87.85	1.43992	68.6	101.06	1.65643	65.2
Chloride	35.5	1		3.3	0.09223	4.6	3.6	0.10041	4.8	7.4	0.20844	8.2
Nitrate-N	14.0	1		0.0	0.00071	0.0	0.0	0.00071	0.0	0.0	0.00107	0.0
Sulfate	96.1	2		17.1	0.35604	17.6	26.7	0.55592	26.5	32.4	0.6746	26.5
Total Anions (meq/L)					2.0						2.5	
Total Ions (meq/L)					4.0						5.1	
Cation/Anion Ratio					0.97						1.00	
Percent Difference					-1.3						0.0	
TRILINEAR DIAGRAM DATA												
sum (Ca, Mg, Na+K)				1.93			1.94				2.45	
Calcium					34.14			41.61			39.69	
Magnesium					43.50			41.51			45.31	
Sodium + Potassium					22.36			16.89			15.01	
								100.0			100.0	
sum (SO ₄ , Cl, HCO ₃ +CO ₃)				2.02			2.10				2.54	
Sulfate					17.643			26.496			26.551	
Chloride					4.571			4.786			8.204	
Bicarbonate + Carbonate					77.787			68.718			65.245	
								100.0			100.0	

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from April 1, 2010 to June 30, 2010

Site ID	MW	n	MW-56 4/16/10			MW-57 4/26/10			MW-76 4/15/10			MW-83 4/23/10			MW-60 4/27/10			MW-94 4/23/10		
Cations			mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
Calcium	40.1	2	13.5	0.67365	51.3	15.2	0.75848	35.0	11.4	0.56886	43.1	16.0	0.7984	45.7	19.4	0.96806	46.1	11.4	0.56886	44.3
Magnesium	24.3	2	5.1	0.42296	32.2	9.7	0.79901	36.9	5.4	0.44764	33.9	8.0	0.65748	37.6	10.1	0.8311	39.6	5.8	0.47315	36.9
Potassium	39.1	1	0.9	0.0231	1.8	0.9	0.02241	1.0	1.0	0.02547	1.9	1.5	0.03888	2.2	1.2	0.03044	1.4	1.3	0.03376	2.6
Sodium	23.0	1	4.4	0.18921	14.4	6.8	0.29622	13.7	6.4	0.27795	21.0	5.8	0.25185	14.4	6.2	0.26969	12.8	4.8	0.20705	16.1
Iron	55.8	2	0.02	0.00064	0.0	7.81	0.27969	12.9	0.01	0.00036	0.0	0.01	0.00036	0.0	0.01	0.00036	0.0	0.01	0.00036	0.0
Manganese	54.9	2	0.05	0.00199	0.2	0.22	0.00815	0.4	0.00	3.6E-05	0.0	0.00	0.00016	0.0	0.00	4.9E-05	0.0	0.00	3.6E-05	0.0
Ammonia-N	14.0	1	0.01	0.00071	0.1	0.02	0.00158	0.1	0.01	0.00071	0.1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.1
Total Cations (meq/L)				1.3			2.2			1.3			1.7			2.1			1.3	
Anions																				
Alkalinity, Total			49			76			44			65			93			48		
Carbonate	60.0	2	3E-09	9.9E-11	0.0	5E-09	1.5E-10	0.0	3E-09	8.8E-11	0.0	4E-09	1.3E-10	0.0	6E-09	1.9E-10	0.0	3E-09	9.5E-11	0.0
Bicarbonate	61.0	1	60.02	0.98385	66.9	92.35	1.51377	75.6	53.56	0.87787	59.8	79.79	1.3078	69.7	113.22	1.85572	84.0	58.07	0.95186	68.5
Chloride	35.5	1	4.2	0.11762	8.0	4.2	0.11959	6.0	4.0	0.1117	7.6	5.2	0.14667	7.8	2.9	0.08236	3.7	3.5	0.09985	7.2
Nitrate-N	14.0	1	0.69	0.04926	3.3	0.03	0.00186	0.1	1.16	0.08282	5.6	0.16	0.01128	0.6	1.43	0.10209	4.6	0.90	0.06411	4.6
Sulfate	96.1	2	15.4	0.32064	21.8	17.6	0.36645	18.3	19.0	0.3956	26.9	19.7	0.41017	21.9	8.1	0.16802	7.6	13.1	0.27275	19.6
Total Anions (meq/L)				1.5			2.0			1.5			1.9			2.2			1.4	
Total Ions (meq/L)				2.8			4.2			2.8			3.6			4.3			2.7	
Cation/Anion Ratio				0.89			1.08			0.90			0.93			0.95			0.92	
Percent Difference				-5.7			3.9			-5.3			-3.5			-2.5			-3.9	
TRILINEAR DIAGRAM DATA																				
sum (Ca, Mg, Na+K)				1.31			1.88			1.32			1.75			2.10			1.28	
Calcium					51.47			40.43			43.10			45.71			46.11		44.34	
Magnesium					32.31			42.59			33.91			37.64			39.59		36.88	
Sodium + Potassium					16.22			16.98			22.99			16.65			14.30		18.77	
sum (SO ₄ , Cl, HCO ₃ +CO ₃)				1.42			2.00			1.39			1.86			2.11			1.32	
Sulfate					22.547			18.324			28.560			21.997			7.978		20.594	
Chloride					8.271			5.980			8.064			7.866			3.911		7.539	
Bicarbonate + Carbonate					69.182			75.696			63.377			70.137			88.111		71.868	

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from April 1, 2010 to June 30, 2010

Site ID	MW-82	MW-65	MW-58A	MW-59	MW-24	MW-64
Date	4/16/10	4/16/10	4/2/10	4/2/10	4/2/10	4/20/10
Cations	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)
Calcium	40.1 2 13.7 0.68363 41.5	10.7 0.53393 35.9	16.5 0.82335 46.9	13.2 0.65868 39.9	14.9 0.74351 39.6	17.6 0.87824 37.7
Magnesium	24.3 2 8.5 0.70109 42.6	6.7 0.55462 37.3	7.8 0.64349 36.7	7.2 0.59494 36.0	9.0 0.73812 39.4	13.6 1.11911 48.1
Potassium	39.1 1 1.3 0.03274 2.0	0.9 0.02228 1.5	1.0 0.02558 1.5	1.1 0.02762 1.7	0.9 0.02404 1.3	1.4 0.03504 1.5
Sodium	23.0 1 5.2 0.22749 13.8	5.2 0.22488 15.1	4.8 0.20792 11.9	5.1 0.22358 13.5	5.3 0.22836 12.2	6.6 0.28795 12.4
Iron	55.8 2 0.01 0.00036 0.0	4.00 0.14325 9.6	1.02 0.03653 2.1	3.99 0.14289 8.6	3.73 0.13358 7.1	0.01 0.00036 0.0
Manganese	54.9 2 0.00 3.6E-05 0.0	0.19 0.00684 0.5	0.34 0.01238 0.7	0.10 0.00356 0.2	0.14 0.00499 0.3	0.13 0.00477 0.2
Ammonia-N	14.0 1 0.01 0.00071 0.0	0.01 0.00071 0.0	0.07 0.005 0.3	0.01 0.00071 0.0	0.04 0.00312 0.2	0.04 0.00311 0.1
Total Cations (meq/L)	1.6	1.5	1.8	1.7	1.9	2.3
Anions						
Alkalinity, Total	72	52	75	64	75	78
Carbonate	4E-09 1.4E-10 0.0	3E-09 1E-10 0.0	0.1584 0.00528 0.3	0.0266 0.00089 0.1	0.0568 0.00189 0.1	5E-09 1.6E-10 0.0
Bicarbonate	87.23 1.42978 75.3	63.07 1.03384 71.9	90.57 1.4845 76.3	77.90 1.27692 72.9	91.51 1.49988 76.1	95.65 1.56776 62.7
Chloride	4.5 0.12608 6.6	4.2 0.1179 8.2	3.9 0.10916 5.6	4.1 0.11593 6.6	4.5 0.12552 6.4	3.8 0.10831 4.3
Nitrate-N	0.88 0.06247 3.3	0.01 0.00086 0.1	0.01 0.00071 0.0	0.01 0.00071 0.0	0.01 0.00071 0.0	0.03 0.00193 0.1
Sulfate	13.5 0.28108 14.8	13.7 0.28525 19.8	16.6 0.34563 17.8	17.1 0.35604 20.3	16.5 0.34354 17.4	39.5 0.82242 32.9
Total Anions (meq/L)	1.9	1.4	1.9	1.8	2.0	2.5
Total Ions (meq/L)	3.5	2.9	3.7	3.4	3.8	4.8
Cation/Anion Ratio	0.87	1.03	0.90	0.94	0.95	0.93
Percent Difference	-7.1	1.7	-5.2	-2.9	-2.5	-3.6
TRILINEAR DIAGRAM DATA						
sum (Ca, Mg, Na+K)	1.64	1.34	1.70	1.50	1.73	2.32
Calcium	41.56	39.97	48.42	43.77	42.88	37.85
Magnesium	42.62	41.52	37.84	39.54	42.57	48.23
Sodium + Potassium	15.82	18.50	13.73	16.69	14.56	13.92
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	1.84	1.44	1.94	1.75	1.97	2.50
Sulfate	15.302	19.850	17.774	20.348	17.431	32.917
Chloride	6.864	8.205	5.614	6.625	6.369	4.335
Bicarbonate + Carbonate	77.835	71.945	76.612	73.027	76.200	62.748

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from April 1, 2010 to June 30, 2010

Site ID	MW-70	MW-77	MW-72	MW-69	MW-100	MW-93
Date	4/15/10	4/20/10	4/19/10	4/19/10	4/23/10	4/22/10
Cations	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)
Calcium	40.1 2 15.3 0.76347 45.1	24.0 1.1976 44.3	22.1 1.10279 42.9	23.4 1.16766 47.2	23.7 1.18263 39.9	30.0 1.49701 45.7
Magnesium	24.3 2 8.2 0.67147 39.6	13.5 1.11088 41.1	13.8 1.13557 44.2	11.6 0.95454 38.6	15.3 1.259 42.5	16.6 1.36597 41.7
Potassium	39.1 1 1.3 0.03223 1.9	1.4 0.03504 1.3	1.5 0.03939 1.5	1.5 0.03709 1.5	1.9 0.04911 1.7	1.4 0.03555 1.1
Sodium	23.0 1 5.2 0.22445 13.3	8.2 0.35842 13.3	6.5 0.2836 11.0	7.1 0.3084 12.5	9.1 0.39365 13.3	8.4 0.36668 11.2
Iron	55.8 2 0.01 0.00036 0.0	0.01 0.00036 0.0	0.01 0.00036 0.0	0.01 0.00036 0.0	1.96 0.07019 2.4	0.01 0.00036 0.0
Manganese	54.9 2 0.03 0.0011 0.1	0.02 0.00074 0.0	0.23 0.00845 0.3	0.16 0.00597 0.2	0.17 0.00633 0.2	0.28 0.01001 0.3
Ammonia-N	14.0 1 0.01 0.00071 0.0	0.01 0.00071 0.0	0.02 0.00107 0.0	0.01 0.00086 0.0	0.01 0.00071 0.0	0.04 0.00321 0.1
Total Cations (meq/L)	1.7	2.7	2.6	2.5	3.0	3.3
Anions						
Alkalinity, Total	71	130	110	116	122	99
Carbonate	60.0 2 4E-09 1.4E-10 0.0	8E-09 2.6E-10 0.0	7E-09 2.2E-10 0.0	7E-09 2.3E-10 0.0	7E-09 2.4E-10 0.0	6E-09 2E-10 0.0
Bicarbonate	61.0 1 86.99 1.42578 74.8	158.60 2.59961 85.2	134.20 2.19967 77.0	141.52 2.31965 84.2	148.84 2.43963 82.2	120.41 1.9737 56.1
Chloride	35.5 1 3.7 0.10549 5.5	4.7 0.13201 4.3	4.3 0.12101 4.2	4.1 0.11508 4.2	3.3 0.09252 3.1	3.0 0.08547 2.4
Nitrate-N	14.0 1 0.05 0.00368 0.2	1.12 0.07996 2.6	0.01 0.00071 0.0	0.01 0.00071 0.0	0.01 0.00071 0.0	0.01 0.00071 0.0
Sulfate	96.1 2 17.8 0.37061 19.4	11.5 0.23944 7.8	25.8 0.53718 18.8	15.3 0.31856 11.6	20.9 0.43516 14.7	70.1 1.45954 41.5
Total Anions (meq/L)	1.9	3.1	2.9	2.8	3.0	3.5
Total Ions (meq/L)	3.6	5.8	5.4	5.2	5.9	6.8
Cation/Anion Ratio	0.89	0.89	0.90	0.90	1.00	0.93
Percent Difference	-5.9	-6.0	-5.3	-5.3	-0.1	-3.5
TRILINEAR DIAGRAM DATA						
sum (Ca, Mg, Na+K)	1.69	2.70	2.56	2.47	2.88	3.27
Calcium	45.13	44.32	43.06	47.32	41.00	45.85
Magnesium	39.69	41.11	44.33	38.68	43.65	41.83
Sodium + Potassium	15.17	14.56	12.61	14.00	15.35	12.32
	100.0	100.0				
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	1.90	2.97	2.86	2.75	2.97	3.52
Sulfate	19.486	8.059	18.797	11.570	14.665	41.479
Chloride	5.547	4.443	4.234	4.180	3.118	2.429
Bicarbonate + Carbonate	74.967	87.498	76.969	84.250	82.217	56.092

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from April 1, 2010 to June 30, 2010

Site ID	MW-95 4/22/10				MW-84 4/20/10				MW-81 4/23/10				MW-21 4/2/10				MW-73 4/21/10				MW-99 4/13/10			
Date																								
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	
Calcium	40.1	2	18.0	0.8982	43.9	10.3	0.51397	34.6	10.2	0.50898	40.1	9.5	0.47455	38.6	12.2	0.60878	42.8	7.8	0.39072	34.0	7.8	0.39072	34.0	
Magnesium	24.3	2	10.4	0.85579	41.8	8.5	0.69698	47.0	6.0	0.49373	38.9	5.5	0.44929	36.5	6.7	0.54804	38.5	4.2	0.34149	29.7	4.2	0.34149	29.7	
Potassium	39.1	1	1.1	0.0289	1.4	0.9	0.02333	1.6	0.7	0.01842	1.5	1.1	0.02686	2.2	0.7	0.01911	1.3	0.8	0.02164	1.9	0.8	0.02164	1.9	
Sodium	23.0	1	5.9	0.25751	12.6	5.7	0.24837	16.7	5.7	0.2462	19.4	4.7	0.20226	16.5	5.6	0.24489	17.2	9.0	0.39061	34.0	9.0	0.39061	34.0	
Iron	55.8	2	0.01	0.00036	0.0	0.01	0.00036	0.0	0.01	0.00036	0.0	2.04	0.07306	5.9	0.01	0.00036	0.0	0.03	0.00104	0.1	0.03	0.00104	0.1	
Manganese	54.9	2	0.12	0.00451	0.2	0.01	0.00023	0.0	0.00	3.6E-05	0.0	0.07	0.00256	0.2	0.00	3.6E-05	0.0	0.05	0.00176	0.2	0.05	0.00176	0.2	
Ammonia-N	14.0	1	0.02	0.00152	0.1	0.01	0.00071	0.0	0.01	0.00071	0.1	0.01	0.00071	0.1	0.01	0.00071	0.1	0.03	0.00226	0.2	0.03	0.00226	0.2	
Total Cations (meq/L)	2.0				1.5				1.3				1.2				1.4				1.1			
Anions																								
Alkalinity, Total	83				58				47				53				55				51			
Carbonate	60.0	2	5E-09	1.7E-10	0.0	3E-09	1.2E-10	0.0	3E-09	9.5E-11	0.0	0.1085	0.00362	0.3	3E-09	1.1E-10	0.0	3E-09	1E-10	0.0	3E-09	1E-10	0.0	
Bicarbonate	61.0	1	101.50	1.66375	76.7	70.15	1.14983	73.2	57.71	0.94586	70.9	64.93	1.06422	84.4	66.86	1.09583	71.1	62.10	1.01785	80.4	62.10	1.01785	80.4	
Chloride	35.5	1	5.8	0.16388	7.6	3.6	0.10211	6.5	3.1	0.08716	6.5	2.9	0.08123	6.4	3.9	0.11029	7.2	3.1	0.088	7.0	3.1	0.088	7.0	
Nitrate-N	14.0	1	0.01	0.00071	0.0	0.52	0.03684	2.3	1.55	0.11066	8.3	0.01	0.00071	0.1	1.85	0.13208	8.6	0.03	0.00221	0.2	0.03	0.00221	0.2	
Sulfate	96.1	2	16.4	0.34146	15.7	13.5	0.28108	17.9	9.1	0.18947	14.2	5.4	0.11181	8.9	9.8	0.20342	13.2	7.6	0.1572	12.4	7.6	0.1572	12.4	
Total Anions (meq/L)	2.2				1.6				1.3				1.3				1.5				1.3			
Total Ions (meq/L)	4.2				3.1				2.6				2.5				3.0				2.4			
Cation/Anion Ratio	0.94				0.95				0.95				0.97				0.92				0.91			
Percent Difference	-2.9				-2.8				-2.5				-1.3				-4.0				-4.8			
TRILINEAR DIAGRAM DATA																								
sum (Ca, Mg, Na+K)	2.04				1.48				1.27				1.15				1.42				1.14			
Calcium	44.02				34.67				40.16				41.16				42.85				34.14			
Magnesium	41.94				47.01				38.96				38.97				38.57				29.84			
Sodium + Potassium	14.04				18.33				20.88				19.87				18.58				36.02			
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	2.17				1.53				1.22				1.26				1.41				1.26			
Sulfate	15.742				18.335				15.499				8.867				14.432				12.446			
Chloride	7.555				6.661				7.130				6.443				7.824				6.968			
Bicarbonate + Carbonate	76.703				75.004				77.372				84.690				77.744				80.587			

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Downgradient GW Monitoring Wells

Data Collected from April 1, 2010 to June 30, 2010

Site ID	MW-66	MW-67	MW-80	MW-68	MW-74
Date	4/8/10	4/16/10	4/20/10	4/21/10	4/12/10
Cations					
Calcium	40.1 2	21.8 1.08782	21.7 1.08283	28.3 1.41218	32.4 1.61677
Magnesium	24.3 2	12.9 1.06151	12.0 0.98745	17.0 1.39889	25.3 2.08188
Potassium	39.1 1	1.3 0.03299	1.3 0.03427	1.6 0.0399	2.0 0.05039
Sodium	23.0 1	7.5 0.32449	6.6 0.28752	8.4 0.36321	10.2 0.44368
Iron	55.8 2	0.0 0.00133	0.0 0.00036	0.0 0.00036	2.1 0.07628
Manganese	54.9 2	0.0 3.6E-05	0.2 0.0083	0.3 0.01088	0.1 0.00473
Ammonia-N	14.0 1	0.0 0.00071	0.0 0.00071	0.0 0.00114	0.0 0.00071
Total Cations (meq/L)	2.6	2.5	2.4	3.2	4.3
Anions					
Alkalinity, Total	107	99.9	78.6	154	164
Carbonate	60.0 2	6E-09 2E-10	5E-09 1.6E-10	9E-09 3.1E-10	1E-08 3.3E-10
Bicarbonate	61.0 1	130.54 2.13968	95.89 1.57176	187.88 3.07954	200.08 3.27951
Chloride	35.5 1	9.0 0.25499	4.7 0.13511	3.4 0.09449	32.4 0.91389
Nitrate-N	14.0 1	0.5 0.03313	1.2 0.04384	0.0 0.00071	0.0 0.00071
Sulfate	96.1 2	11.6 0.24152	42.1 0.87656	15.3 0.31856	26.1 0.54342
Total Anions (meq/L)	2.7	2.9	2.6	3.5	4.7
Total Ions (meq/L)	5.2	5.4	5.0	6.7	9.0
Cation/Anion Ratio	0.96	0.87	0.93	0.92	0.90
Percent Difference	-2.2	-7.2	-3.8	-4.0	-5.1
TRILINEAR DIAGRAM DATA					
sum (Ca, Mg, Na+K)	2.56	2.51	2.39	3.21	4.19
Calcium	36.52	43.39	45.27	43.94	38.56
Magnesium	48.95	42.34	41.28	43.52	49.65
Sodium + Potassium	14.54	14.26	13.45	12.54	11.78
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	2.64	2.86	2.59	3.49	4.74
Sulfate	9.162	25.303	33.830	9.121	11.472
Chloride	9.673	4.732	5.508	2.705	19.293
Bicarbonate + Carbonate	81.166	69.965	60.661	88.174	69.234
		100.0	100.0		

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Downgradient GW Monitoring Wells

Data Collected from April 1, 2010 to June 30, 2010

Site ID	MW-75	MW-87	MW-85	MW-86	MW-88
Date	4/13/10	4/12/10	4/19/10	4/19/10	4/9/10
Cations					
Calcium	mg/L 20.1	mg/L 28.6	mg/L 19.3	mg/L 13.0	mg/L 8.2
	meq/L 1.00299	meq/L 1.42715	meq/L 0.96307	meq/L 0.6487	meq/L 0.41118
	%(meq) 36.7	%(meq) 38.1	%(meq) 40.5	%(meq) 37.1	%(meq) 34.3
Magnesium	mg/L 15.8	mg/L 21.7	mg/L 12.9	mg/L 9.6	mg/L 6.5
	meq/L 1.30014	meq/L 1.78564	meq/L 1.06151	meq/L 0.78914	meq/L 0.53322
	%(meq) 47.5	%(meq) 47.6	%(meq) 44.6	%(meq) 45.2	%(meq) 44.4
Potassium	mg/L 1.6	mg/L 1.9	mg/L 1.3	mg/L 1.2	mg/L 0.8
	meq/L 0.03964	meq/L 0.04885	meq/L 0.03274	meq/L 0.02992	meq/L 0.02054
	%(meq) 1.4	%(meq) 1.3	%(meq) 1.4	%(meq) 1.7	%(meq) 1.7
Sodium	mg/L 7.7	mg/L 8.7	mg/L 7.4	mg/L 6.4	mg/L 5.4
	meq/L 0.33537	meq/L 0.3793	meq/L 0.32014	meq/L 0.27708	meq/L 0.23445
	%(meq) 12.3	%(meq) 10.1	%(meq) 13.5	%(meq) 15.9	%(meq) 19.5
Iron	mg/L 1.5	mg/L 2.8	mg/L 0.0	mg/L 0.0	mg/L 0.0
	meq/L 0.05193	meq/L 0.0992	meq/L 0.00036	meq/L 0.00036	meq/L 0.00036
	%(meq) 1.9	%(meq) 2.6	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0
Manganese	mg/L 0.1	mg/L 0.3	mg/L 0.0	mg/L 0.0	mg/L 0.0
	meq/L 0.00419	meq/L 0.00976	meq/L 3.6E-05	meq/L 0.00087	meq/L 3.6E-05
	%(meq) 0.2	%(meq) 0.3	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0
Ammonia-N	mg/L 0.0	mg/L 0.0	mg/L 0.0	mg/L 0.0	mg/L 0.0
	meq/L 0.00071	meq/L 0.00079	meq/L 0.00071	meq/L 0.00071	meq/L 0.00071
	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0	%(meq) 0.1
Total Cations (meq/L)	2.7	3.8	2.4	1.7	1.2
Anions					
Alkalinity, Total	mg/L 94.6	mg/L 89.8	mg/L 86.1	mg/L 65.4	mg/L 52.4
Carbonate	mg/L 6E-09	mg/L 5E-09	mg/L 5E-09	mg/L 4E-09	mg/L 3E-09
	meq/L 1.9E-10	meq/L 1.8E-10	meq/L 1.7E-10	meq/L 1.3E-10	meq/L 1.1E-10
	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0
Bicarbonate	mg/L 115.41	mg/L 109.56	mg/L 105.04	mg/L 79.79	mg/L 63.93
	meq/L 1.89171	meq/L 1.79573	meq/L 1.72174	meq/L 1.3078	meq/L 1.04784
	%(meq) 63.0	%(meq) 43.7	%(meq) 68.2	%(meq) 71.4	%(meq) 81.2
Chloride	mg/L 8.0	mg/L 4.4	mg/L 6.3	mg/L 4.4	mg/L 2.6
	meq/L 0.2265	meq/L 0.12383	meq/L 0.17855	meq/L 0.12326	meq/L 0.07221
	%(meq) 7.5	%(meq) 3.0	%(meq) 7.1	%(meq) 6.7	%(meq) 5.6
Nitrate-N	mg/L 0.0	mg/L 0.0	mg/L 0.0	mg/L 0.1	mg/L 0.5
	meq/L 0.00071	meq/L 0.00071	meq/L 0.00071	meq/L 0.00458	meq/L 0.03448
	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0	%(meq) 0.3	%(meq) 2.7
Sulfate	mg/L 42.4	mg/L 105.0	mg/L 30.0	mg/L 19.0	mg/L 6.6
	meq/L 0.8828	meq/L 2.18619	meq/L 0.62463	meq/L 0.3956	meq/L 0.13658
	%(meq) 29.4	%(meq) 53.2	%(meq) 24.7	%(meq) 21.6	%(meq) 10.6
Total Anions (meq/L)	3.0	4.1	2.5	1.8	1.3
Total Ions (meq/L)	5.7	7.9	4.9	3.6	2.5
Cation/Anion Ratio	0.91	0.91	0.94	0.95	0.93
Percent Difference	-4.6	-4.5	-3.0	-2	-3.6
TRILINEAR DIAGRAM DATA					
sum (Ca, Mg, Na+K)	2.68	3.64	2.38	1.74	1.20
Calcium	37.45	39.20	40.51	37.18	34.28
Magnesium	48.55	49.04	44.65	45.23	44.46
Sodium + Potassium	14.00	11.76	14.84	17.59	21.26
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	3.00	4.11	2.52	1.83	1.26
Sulfate	29.417	53.247	24.738	21.657	10.869
Chloride	7.547	3.016	7.071	6.748	5.746
Bicarbonate + Carbonate	63.036	43.737	68.190	71.595	83.385

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Downgradient GW Monitoring Wells

Data Collected from April 1, 2010 to June 30, 2010

Site ID	MW-89	MW-90	MW-91	MW-43
Date	4/9/10	4/8/10	4/19/10	4/8/10
Cations	mg/L	mg/L	mg/L	mg/L
Calcium	13.2	16.1	17.8	12.5
Magnesium	9.7	9.6	12.5	9.0
Potassium	1.4	1.3	1.5	1.3
Sodium	8.5	6.1	6.9	6.1
Iron	0.8	1.2	0.0	1.0
Manganese	0.3	0.3	0.2	0.2
Ammonia-N	0.0	0.0	0.0	0.0
Total Cations (meq/L)	1.9	1.9	2.3	1.7
Anions				
Alkalinity, Total	77.8	69.7	80.2	71
Carbonate	5E-09	4E-09	5E-09	4E-09
Bicarbonate	94.92	85.03	97.84	86.62
Chloride	3.3	3.7	7.5	2.7
Nitrate-N	0.0	0.0	0.0	0.0
Sulfate	17.2	27.2	33.7	13.2
Total Anions (meq/L)	2.0	2.1	2.5	1.8
Total Ions (meq/L)	3.9	4.0	4.8	3.5
Cation/Anion Ratio	0.95	0.94	0.90	0.96
Percent Difference	-2.7	-3.0	-5.4	-1.9
TRILINEAR DIAGRAM DATA				
sum (Ca, Mg, Na+K)	1.86	1.89	2.25	1.66
Calcium	35.38	42.48	39.43	37.49
Magnesium	42.92	41.72	45.66	44.47
Sodium + Potassium	21.70	15.80	14.91	18.04
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	2.01	2.06	2.52	1.77
Sulfate	17.851	27.432	27.890	15.511
Chloride	4.598	5.055	8.364	4.362
Bicarbonate + Carbonate	77.551	67.513	63.746	80.128
		100.0	100.0	100.0

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from July 1, 2010 to September 30, 2010

Site ID	MW-56	MW-57	MW-76	MW-83	MW-60	MW-94
Date	7/7/10	7/7/10	7/20/10	7/22/10	7/20/10	8/18/10
Cations	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Calcium	16.8	0.7984	12.1	0.60379	19.9	0.9301
Magnesium	5.5	0.45505	5.6	0.46246	10.1	0.8311
Potassium	1.0	0.02583	1.1	0.02686	1.2	0.03146
Sodium	4.8	0.20792	6.5	0.2823	6.3	0.27447
Iron	0.02	0.00082	0.1	0.00036	0.01	0.00036
Manganese	0.07	0.00256	0.4	0.00021	0.00	3.6E-05
Ammonia-N	0.01	0.00071	0.1	0.00071	0.01	0.00071
Total Cations (meq/L)	1.5	2.1	1.4	1.9	2.1	1.3
Anions	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Alkalinity, Total	51	78	45	68	92	49
Carbonate	0.0236	0.00079	0.1	0.0259	0.00086	0.0
Bicarbonate	61.0	1.01106	67.6	1.5669	77.0	1.5669
Chloride	3.9	0.10916	5.4	0.10916	5.4	0.10916
Nitrate-N	0.74	0.0529	3.5	0.02	0.00121	0.1
Sulfate	15.4	0.32064	21.5	17.2	0.35812	17.6
Total Anions (meq/L)	1.5	2.0	1.4	1.9	2.2	1.4
Total Ions (meq/L)	3.0	4.1	2.8	3.8	4.3	2.7
Cation/Anion Ratio	1.02	1.01	0.97	0.99	0.98	0.97
Percent Difference	1.2	0.4	-1.4	-0.5	-1.1	-1.8
TRILINEAR DIAGRAM DATA						
sum (Ca, Mg, Na+K)	1.53	1.76	1.39	1.90	2.13	1.32
Calcium	54.90	45.46	43.43	44.92	46.62	48.46
Magnesium	29.80	37.20	33.27	38.34	39.02	33.09
Sodium + Potassium	15.31	17.34	23.30	16.74	14.36	18.45
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	1.44	2.04	1.37	1.92	2.07	1.31
Sulfate	22.241	17.598	27.796	22.059	7.434	17.672
Chloride	7.572	5.364	6.996	7.390	3.562	6.794
Bicarbonate + Carbonate	70.187	77.038	65.208	70.551	89.005	75.535

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from July 1, 2010 to September 30, 2010

Site ID	MW	n	MW-82			MW-65			MW-58A			MW-59			MW-24			MW-64			
Date			mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	
Cations																					
Calcium	40.1	2	15.9	0.79341	42.5	10.7	0.53393	36.7	17.2	0.85828	45.8	13.7	0.68363	38.5	15.2	0.75848	38.4	17.8	0.88822	39.0	
Magnesium	24.3	2	9.3	0.76857	41.2	6.2	0.51183	35.2	8.6	0.7052	37.6	8.2	0.6764	38.1	9.7	0.79572	40.3	12.3	1.01214	44.5	
Potassium	39.1	1	1.5	0.03734	2.0	0.9	0.0231	1.6	1.1	0.02711	1.4	1.1	0.02762	1.6	0.9	0.02348	1.2	1.5	0.03734	1.6	
Sodium	23.0	1	6.1	0.26534	14.2	5.4	0.23402	16.1	5.3	0.23184	12.4	5.4	0.23445	13.2	5.7	0.24576	12.5	6.9	0.29926	13.1	
Iron	55.8	2	0.01	0.00036	0.0	3.99	0.14289	9.8	0.95	0.03406	1.8	4.11	0.14719	8.3	3.92	0.14038	7.1	0.72	0.02571	1.1	
Manganese	54.9	2	0.00	3.6E-05	0.0	0.19	0.00699	0.5	0.34	0.01234	0.7	0.10	0.00375	0.2	0.17	0.00608	0.3	0.23	0.00834	0.4	
Ammonia-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.07	0.00508	0.3	0.01	0.00071	0.0	0.04	0.00295	0.1	0.08	0.00596	0.3	
Total Cations (meq/L)			1.9			1.5			1.9			1.8			2.0			2.3			
Anions																					
Alkalinity, Total			80			53			75			63			75			87			
Carbonate	60.0	2	0.0253	0.00084	0.0	0.022	0.00073	0.1	0.0873	0.00291	0.2	0.0266	0.00089	0.1	0.0321	0.00107	0.1	0.0128	0.00043	0.0	
Bicarbonate	61.0	1	97.79	1.60291	76.0	64.49	1.05711	72.5	90.83	1.48887	77.3	76.20	1.24893	73.0	91.92	1.5067	75.8	105.63	1.73131	75.9	
Chloride	35.5	1	4.8	0.13483	6.4	3.7	0.1038	7.1	3.6	0.10267	5.3	3.8	0.10718	6.3	4.5	0.1258	6.3	3.3	0.09167	4.0	
Nitrate-N	14.0	1	0.94	0.0669	3.2	0.01	0.00071	0.0	0.02	0.00107	0.1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.001	0.0	
Sulfate	96.1	2	14.6	0.30398	14.4	14.2	0.29566	20.3	15.9	0.33105	17.2	17.0	0.35395	20.7	17.0	0.35395	17.8	22.0	0.45806	20.1	
Total Anions (meq/L)			2.1			1.5			1.9			1.7			2.0			2.3			
Total Ions (meq/L)			4.0			2.9			3.8			3.5			4.0			4.6			
Cation/Anion Ratio			0.88			1.00			0.97			1.04			0.99			1.00			
Percent Difference			-6.1			-0.2			-1.4			1.8			-0.4			-0.1			
TRILINEAR DIAGRAM DATA																					
sum (Ca, Mg, Na+K)			1.86			1.30			1.82			1.62			1.82			2.24			
Calcium			42.55			40.98			47.10			42.14			41.60			39.71			
Magnesium			41.22			39.28			38.70			41.70			43.64			45.25			
Sodium + Potassium			16.23			19.73			14.21			16.16			14.77			15.05			
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			2.04			1.46			1.93			1.71			1.99			2.28			
Sulfate			14.882			20.288			17.193			20.688			17.809			20.077			
Chloride			6.601			7.123			5.332			6.265			6.329			4.018			
Bicarbonate + Carbonate			78.517			72.589			77.475			73.048			75.862			75.905			

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from July 1, 2010 to September 30, 2010

Site ID	Date	MW	MW-70		MW-77		MW-78		MW-72		MW-69		MW-100	
			mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Cations		n		% (meq)		% (meq)		% (meq)		% (meq)		% (meq)		% (meq)
Calcium	40.1	2	17.0	0.8483	44.1	26.2	1.30739	43.4	14.0	0.6986	20.1	1.00299	24.6	1.22754
Magnesium	24.3	2	9.5	0.77844	40.5	15.3	1.259	41.8	6.8	0.55873	12.5	1.02859	15.2	1.25077
Potassium	39.1	1	1.4	0.03606	1.9	1.6	0.0399	1.3	2.1	0.05294	1.5	0.03734	2.0	0.05192
Sodium	23.0	1	5.9	0.25794	13.4	9.2	0.40105	13.3	6.5	0.28099	6.7	0.28969	9.2	0.398
Iron	55.8	2	0.01	0.00036	0.0	0.01	0.00036	0.0	0.01	0.00036	1.10	0.03939	1.4	0.06983
Manganese	54.9	2	0.03	0.00119	0.1	0.02	0.0009	0.0	0.22	0.00815	0.18	0.00659	0.2	0.00768
Ammonia-N	14.0	1	0.02	0.00129	0.1	0.01	0.00071	0.0	0.01	0.00071	0.01	0.00071	0.01	0.00071
Total Cations (meq/L)			1.9		3.0		1.6		2.4		2.8		3.0	
Anions														
Alkalinity, Total			74		129		69		112		118		120	
Carbonate	60.0	2	0.0861	0.00287	0.1	0.0562	0.00187	0.1	0.1091	0.00364	0.3381	0.01127	0.4	0.056
Bicarbonate	61.0	1	89.62	1.46891	74.7	157.27	2.57774	85.0	136.42	2.23603	143.27	2.34838	84.8	2.39777
Chloride	35.5	1	3.7	0.10521	5.3	4.6	0.13088	4.3	8.1	0.14301	4.0	0.11142	2.7	0.07672
Nitrate-N	14.0	1	0.04	0.00257	0.1	1.11	0.07925	2.6	0.01	0.00071	0.01	0.00071	0.01	0.00071
Sulfate	96.1	2	18.6	0.38727	19.7	11.6	0.24152	8.0	26.7	0.55592	14.3	0.29774	20.4	0.42475
Total Anions (meq/L)			2.0		3.0		1.8		2.9		2.8		2.9	
Total Ions (meq/L)			3.9		6.0		3.4		5.3		5.6		5.9	
Cation/Anion Ratio			0.98		0.99		0.90		0.84		1.02		1.04	
Percent Difference			-1.1		-0.4		-5.3		-8.8		0.8		1.8	
TRILINEAR DIAGRAM DATA														
sum (Ca, Mg, Na+K)			1.92		3.01		1.59		2.36		2.77		2.93	
Calcium			44.17		43.47		43.90		42.52		47.26		41.92	
Magnesium			40.53		41.86		35.11		43.61		38.97		42.71	
Sodium + Potassium			15.31		14.66		20.99		13.87		13.77		15.36	
			100.0		100.0									
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.96		2.95		1.69		2.90		2.77		2.90	
Sulfate			19.716		8.182		9.748		19.177		10.753		14.641	
Chloride			5.356		4.434		8.464		3.561		4.024		2.645	
Bicarbonate + Carbonate			74.928		87.385		81.787		77.261		85.223		82.715	

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from July 1, 2010 to September 30, 2010

Site ID	MW-93	MW-95	MW-84	MW-81	MW-73	MW-99
Date	7/28/10	7/28/10	7/22/10	7/21/10	7/21/10	7/9/10
Cations	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
Calcium	40.1 2	30.8 1.53693	46.5 39.8	10.6 0.52894	34.8 41.1	7.6 0.37924
Magnesium	24.3 2	16.0 1.3166	39.8 39.7	8.5 0.70109	46.1 38.0	3.6 0.29706
Potassium	39.1 1	1.5 0.03913	1.2 0.02967	1.5 1.2 0.02992	2.0 1.5	0.7 0.01829
Sodium	23.0 1	9.2 0.39887	12.1 13.5	6.1 0.26534	17.1 19.3	8.4 0.36625
Iron	55.8 2	0.01 0.00036	0.0 0.01 0.00036	0.0 0.01 0.00036	0.0 0.01 0.00036	0.03 0.00097
Manganese	54.9 2	0.29 0.01052	0.3 0.13 0.00462	0.2 0.00 0.0001	0.0 0.00 3.6E-05	0.05 0.00172
Ammonia-N	14.0 1	0.09 0.00631	0.2 0.03 0.0019	0.1 0.01 0.00071	0.1 0.01 0.00071	0.06 0.00443
Total Cations (meq/L)	3.3	2.0	1.5	1.3	1.5	1.1
Anions	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
Alkalinity, Total	104	84	58	48	56	52
Carbonate	60.0 2	0.143 0.00477	0.1 0.2092 0.00697	0.3 0.0186 0.00062	0.0 0.0707 0.00236	0.2 0.0221 0.00074
Bicarbonate	61.0 1	126.59 2.07492	55.2 77.4	70.11 1.14921	74.1 71.1	63.14 1.03499
Chloride	35.5 1	2.9 0.08208	2.2 6.8	3.6 0.10239	6.6 5.9	3.2 0.0897
Nitrate-N	14.0 1	0.01 0.00071	0.0 0.01 0.00071	0.0 0.53 0.03755	2.4 9.1	0.02 0.00136
Sulfate	96.1 2	76.8 1.59904	42.5 15.5	12.5 0.26026	16.8 13.8	7.6 0.15741
Total Anions (meq/L)	3.8	2.2	1.6	1.3	1.6	1.3
Total Ions (meq/L)	7.1	4.1	3.1	2.6	3.1	2.4
Cation/Anion Ratio	0.88	0.91	0.98	0.96	0.96	0.83
Percent Difference	-6.4	-4.8	-0.9	-1.9	-1.9	-9.4
TRILINEAR DIAGRAM DATA						
sum (Ca, Mg, Na+K)	3.29	1.95	1.52	1.30	1.51	1.06
Calcium	46.69	45.00	34.79	41.17	42.77	35.75
Magnesium	40.00	39.89	46.11	38.00	38.27	28.00
Sodium + Potassium	13.31	15.12	19.10	20.83	18.96	36.25
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	3.76	2.15	1.51	1.22	1.42	1.29
Sulfate	42.519	15.459	17.208	15.181	14.640	12.231
Chloride	2.183	6.780	6.770	6.448	7.180	6.970
Bicarbonate + Carbonate	55.299	77.761	76.023	78.371	78.180	80.799

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Downgradient GW Monitoring Wells

Data Collected from July 1, 2010 to September 30, 2010

Site ID	MW-66	MW-67	MW-80	MW-68	MW-74
Date	7/21/10	7/19/10	8/2/10	7/27/10	7/12/10
Cations					
Calcium	mg/L 20.0	mg/L 25.4	mg/L 27.3	mg/L 27.5	mg/L 39.2
	meq/L 0.998	meq/L 1.26747	meq/L 1.12734	meq/L 1.37226	meq/L 1.95609
	%(meq) 35.8	%(meq) 42.9	%(meq) 46.5	%(meq) 43.3	%(meq) 40.4
Magnesium	mg/L 16.9	mg/L 15.4	mg/L 13.7	mg/L 15.5	mg/L 27.1
	meq/L 0.998	meq/L 1.26723	meq/L 1.12734	meq/L 1.27546	meq/L 2.22999
	%(meq) 49.9	%(meq) 42.9	%(meq) 38.5	%(meq) 40.2	%(meq) 46.1
Potassium	mg/L 1.3	mg/L 1.5	mg/L 1.5	mg/L 1.6	mg/L 2.4
	meq/L 0.03325	meq/L 0.03913	meq/L 0.03785	meq/L 0.04195	meq/L 0.06215
	%(meq) 13.1	%(meq) 12.6	%(meq) 11.5	%(meq) 11.9	%(meq) 10.1
Sodium	mg/L 8.4	mg/L 8.6	mg/L 7.8	mg/L 8.7	mg/L 11.2
	meq/L 0.36581	meq/L 0.3719	meq/L 0.33798	meq/L 0.37756	meq/L 0.48717
	%(meq) 13.1	%(meq) 12.6	%(meq) 11.5	%(meq) 11.9	%(meq) 10.1
Iron	mg/L 0.0	mg/L 0.1	mg/L 1.4	mg/L 2.6	mg/L 2.7
	meq/L 0.00036	meq/L 0.00282	meq/L 0.0505	meq/L 0.09168	meq/L 0.09705
	%(meq) 0.0	%(meq) 0.1	%(meq) 0.3	%(meq) 0.3	%(meq) 0.1
Manganese	mg/L 0.0	mg/L 0.1	mg/L 0.3	mg/L 0.3	mg/L 0.2
	meq/L 3.6E-05	meq/L 0.0027	meq/L 0.0099	meq/L 0.00968	meq/L 0.00641
	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0	%(meq) 0.1
Ammonia-N	mg/L 0.0	mg/L 0.0	mg/L 0.0	mg/L 0.0	mg/L 0.0
	meq/L 0.00071	meq/L 0.00071	meq/L 0.001	meq/L 0.00148	meq/L 0.00071
	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0
Total Cations (meq/L)	2.8	3.0	2.9	3.2	4.8
Anions					
Alkalinity, Total	mg/L 112	mg/L 103	mg/L 79.9	mg/L 149	mg/L 166
Carbonate	mg/L 0.0445	mg/L 0.0503	mg/L 0.0604	mg/L 0.2144	mg/L 0.0757
	meq/L 0.00148	meq/L 0.00168	meq/L 0.00201	meq/L 0.00715	meq/L 0.00252
	%(meq) 0.1	%(meq) 0.1	%(meq) 0.1	%(meq) 0.2	%(meq) 0.1
Bicarbonate	mg/L 136.55	mg/L 125.56	mg/L 97.36	mg/L 181.34	mg/L 202.37
	meq/L 2.23818	meq/L 2.05801	meq/L 1.59575	meq/L 2.9724	meq/L 3.31698
	%(meq) 80.6	%(meq) 70.2	%(meq) 61.8	%(meq) 88.0	%(meq) 69.8
Chloride	mg/L 8.4	mg/L 4.5	mg/L 4.8	mg/L 2.9	mg/L 30.6
	meq/L 0.23693	meq/L 0.12749	meq/L 0.13595	meq/L 0.08039	meq/L 0.86311
	%(meq) 8.5	%(meq) 4.3	%(meq) 5.3	%(meq) 2.4	%(meq) 18.2
Nitrate-N	mg/L 0.5	mg/L 0.6	mg/L 0.0	mg/L 0.0	mg/L 0.0
	meq/L 0.03734	meq/L 0.04526	meq/L 0.00071	meq/L 0.00071	meq/L 0.00086
	%(meq) 1.3	%(meq) 1.5	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0
Sulfate	mg/L 12.7	mg/L 33.6	mg/L 40.8	mg/L 15.2	mg/L 27.3
	meq/L 0.26442	meq/L 0.69958	meq/L 0.84949	meq/L 0.31648	meq/L 0.56841
	%(meq) 9.5	%(meq) 23.9	%(meq) 32.9	%(meq) 9.4	%(meq) 12.0
Total Anions (meq/L)	2.8	2.9	2.6	3.4	4.8
Total Ions (meq/L)	5.6	5.9	5.5	6.5	9.6
Cation/Anion Ratio	1.00	1.01	1.13	0.94	1.02
Percent Difference	0.2	0.3	6.2	-3.2	0.9
TRILINEAR DIAGRAM DATA					
sum (Ca, Mg, Na+K)	2.79	2.95	2.87	3.07	4.74
Calcium	35.80	43.03	47.54	44.74	41.31
Magnesium	49.89	43.02	39.34	41.58	47.09
Sodium + Potassium	14.32	13.95	13.12	13.68	11.60
	100.0	100.0	100.0	100.0	100.0
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	2.74	2.89	2.58	3.38	4.75
Sulfate	9.647	24.234	32.885	9.373	11.964
Chloride	8.644	4.416	5.263	2.381	18.167
Bicarbonate + Carbonate	81.709	71.349	61.852	88.246	69.869
	100.0	100.0	100.0	100.0	100.0

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Downgradient GW Monitoring Wells

Data Collected from July 1, 2010 to September 30, 2010

Site ID	MW-75	MW-87	MW-85	MW-86	MW-88
Date	7/9/10	7/12/10	7/22/10	7/27/10	7/28/10
Cations					
Calcium	40.1 2	33.9 1.69162	20.5 1.02295	12.8 0.63872	8.1 0.40319
Magnesium	24.3 2	23.1 1.90084	13.3 1.09443	8.6 0.7052	5.9 0.48714
Potassium	39.1 1	2.3 0.05806	1.4 0.0353	1.2 0.03018	0.8 0.02118
Sodium	23.0 1	9.8 0.42802	7.7 0.33624	6.5 0.28447	5.7 0.24663
Iron	55.8 2	3.0 0.10815	0.0 0.00036	0.5 0.01758	0.0 0.00036
Manganese	54.9 2	0.3 0.0122	0.0 3.6E-05	0.0 0.00058	0.0 3.6E-05
Ammonia-N	14.0 1	0.0 0.00121	0.0 0.00071	0.0 0.00071	0.0 0.00071
Total Cations (meq/L)	2.4	4.2	2.5	1.7	1.2
Anions					
Alkalinity, Total	96.1	88.8	87	67.1	51.9
Carbonate	60.0 2	0.0378 0.00126	0.0 0.0415	0.00254 0.00085	0.0305 0.00102
Bicarbonate	61.0 1	108.26 1.77447	41.6 106.06	81.81 1.34095	63.26 1.03683
Chloride	35.5 1	4.2 0.11762	6.1 0.17319	4.1 0.11677	2.4 0.06657
Nitrate-N	14.0 1	0.0 0.00071	0.2 0.01214	0.1 0.00914	0.5 0.0372
Sulfate	96.1 2	114.0 2.37358	29.6 0.6163	18.3 0.38102	6.7 0.13908
Total Anions (meq/L)	3.1	4.3	2.5	1.8	1.3
Total Ions (meq/L)	5.5	8.5	5.0	3.5	2.4
Cation/Anion Ratio	0.79	0.98	0.98	0.91	0.91
Percent Difference	-11.5	-0.8	-1.0	-5	-5.0
TRILINEAR DIAGRAM DATA					
sum (Ca, Mg, Na+K)	2.39	4.08	2.49	1.66	1.16
Calcium	39.30	41.48	41.10	38.51	34.81
Magnesium	46.53	46.61	43.97	42.52	42.06
Sodium + Potassium	14.17	11.92	14.93	18.97	23.12
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	3.06	4.27	2.53	1.84	1.24
Sulfate	30.236	55.627	24.367	20.712	11.185
Chloride	7.051	2.757	6.847	6.348	5.353
Bicarbonate + Carbonate	62.713	41.616	68.786	72.940	83.462

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Downgradient GW Monitoring Wells

Data Collected from July 1, 2010 to September 30, 2010

Site ID	MW-89	MW-90	MW-91	MW-43
Date	7/28/10	7/21/10	7/19/10	7/22/10
Cations	MW			
Calcium	40.1 2	mg/L 12.5 meq/L 0.62375 % (meq) 34.0	mg/L 16.0 meq/L 0.7984 % (meq) 40.6	mg/L 12.7 meq/L 0.63373 % (meq) 36.2
Magnesium	24.3 2	9.1 0.7447 40.6	9.8 0.8056 41.0	9.2 0.75787 43.3
Potassium	39.1 1	1.5 0.03709 2.0	1.4 0.0353 1.8	1.4 0.03478 2.0
Sodium	23.0 1	9.0 0.39322 21.4	6.4 0.27751 14.1	6.4 0.27621 15.8
Iron	55.8 2	0.7 0.02586 1.4	1.1 0.03975 2.0	1.1 0.0376 2.1
Manganese	54.9 2	0.3 0.0091 0.5	0.3 0.00914 0.5	0.2 0.00761 0.4
Ammonia-N	14.0 1	0.0 0.00166 0.1	0.0 0.00129 0.1	0.0 0.00171 0.1
Total Cations (meq/L)	1.8	2.0	2.6	1.7
Anions				
Alkalinity, Total	75.3	68.1	83.5	69.4
Carbonate	60.0 2	0.0624 0.00208 0.1	0.1074 0.00358 0.2	0.1378 0.00459 0.3
Bicarbonate	61.0 1	91.74 1.50369 77.2	82.86 1.35821 67.7	84.39 1.3832 79.4
Chloride	35.5 1	3.2 0.09026 4.6	3.6 0.10098 5.0	2.7 0.077 4.4
Nitrate-N	14.0 1	0.0 0.00071 0.0	0.0 0.00071 0.0	0.0 0.00071 0.0
Sulfate	96.1 2	16.9 0.35187 18.1	26.1 0.54342 27.1	13.3 0.27692 15.9
Total Anions (meq/L)	1.9	2.0	2.6	1.7
Total Ions (meq/L)	3.8	4.0	5.2	3.5
Cation/Anion Ratio	0.94	0.98	1.01	1.00
Percent Difference	-3.0	-1.0	0.4	0.2
TRILINEAR DIAGRAM DATA				
sum (Ca, Mg, Na+K)	1.80	1.92	2.53	1.70
Calcium	34.68	41.65	39.18	37.22
Magnesium	41.40	42.03	46.11	44.51
Sodium + Potassium	23.92	16.32	14.71	18.27
		100.0	100.0	100.0
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	1.95	2.01	2.59	1.74
Sulfate	18.064	27.087	27.776	15.899
Chloride	4.634	5.033	7.657	4.421
Bicarbonate + Carbonate	77.302	67.879	64.567	79.680
		100.0	100.0	100.0

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from October 1, 2010 to December 31, 2010

Site ID	MW-56	MW-57	MW-76	MW-83	MW-60	MW-94
Date	10/14/10	10/29/10	10/22/10	10/13/10	10/28/10	10/29/10
Cations	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)
Calcium	40.1 2 15.8 0.78842 49.9	15.3 0.76347 35.7	12.4 0.61876 44.1	16.1 0.80339 49.3	20.7 1.03293 49.1	12.6 0.62874 45.9
Magnesium	24.3 2 6.6 0.54145 34.3	9.0 0.74306 34.8	5.6 0.4567 32.6	6.5 0.53816 33.0	9.4 0.77679 36.9	5.8 0.47974 35.0
Potassium	39.1 1 1.1 0.02711 1.7	0.9 0.02233 1.0	1.1 0.02916 2.1	1.8 0.04655 2.9	1.3 0.03223 1.5	1.5 0.03862 2.8
Sodium	23.0 1 5.0 0.21749 13.8	6.5 0.28099 13.1	6.8 0.29622 21.1	5.5 0.24098 14.8	6.0 0.26229 12.5	5.1 0.22271 16.2
Iron	55.8 2 0.02 0.00064 0.0	8.87 0.31765 14.9	0.01 0.00036 0.0	0.01 0.00036 0.0	0.01 0.00036 0.0	0.01 0.00036 0.0
Manganese	54.9 2 0.08 0.00287 0.2	0.24 0.00866 0.4	0.00 3.6E-05 0.0	0.00 3.6E-05 0.0	0.00 3.6E-05 0.0	0.00 3.6E-05 0.0
Ammonia-N	14.0 1 0.01 0.00071 0.0	0.02 0.00164 0.1	0.01 0.00071 0.1	0.01 0.00071 0.0	0.01 0.00071 0.0	0.01 0.00071 0.1
Total Cations (meq/L)	1.6	2.1	1.4	1.6	2.1	1.4
Anions						
Alkalinity, Total	56	77	46	67	93	53
Carbonate	60.0 2 0.036 0.0012 0.1	0.0265 0.00088 0.0	0.0119 0.0004 0.0	0.0611 0.00204 0.1	0.0598 0.00199 0.1	0.0643 0.00214 0.1
Bicarbonate	61.0 1 68.12 1.11663 68.8	93.52 1.53288 76.1	55.49 0.90946 62.0	81.86 1.34176 71.9	113.22 1.85573 84.4	63.92 1.0477 72.3
Chloride	35.5 1 4.0 0.11367 7.0	3.9 0.10859 5.4	3.7 0.10521 7.2	4.4 0.12354 6.6	2.8 0.07813 3.6	3.7 0.10465 7.2
Nitrate-N	14.0 1 0.15 0.01092 0.7	0.01 0.00071 0.0	0.87 0.06218 4.2	0.45 0.03213 1.7	1.60 0.11423 5.2	0.89 0.06368 4.4
Sulfate	96.1 2 18.3 0.38102 23.5	17.8 0.37061 18.4	18.7 0.38935 26.5	17.6 0.36645 19.6	7.1 0.14866 6.8	11.1 0.23111 15.9
Total Anions (meq/L)	1.6	2.0	1.5	1.9	2.2	1.4
Total Ions (meq/L)	3.2	4.2	2.9	3.5	4.3	2.8
Cation/Anion Ratio	0.97	1.06	0.96	0.87	0.96	0.95
Percent Difference	-1.4	3.0	-2.3	-6.7	-2.2	-2.8
TRILINEAR DIAGRAM DATA						
sum (Ca, Mg, Na+K)	1.57	1.81	1.40	1.63	2.10	1.37
Calcium	50.08	42.18	44.17	49.32	49.09	45.90
Magnesium	34.39	41.06	32.60	33.03	36.92	35.02
Sodium + Potassium	15.54	16.76	23.23	17.65	14.00	19.08
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	1.61	2.01	1.40	1.83	2.08	1.39
Sulfate	23.629	18.411	27.723	19.983	7.132	16.680
Chloride	7.049	5.395	7.491	6.737	3.748	7.552
Bicarbonate + Carbonate	69.322	76.194	64.786	73.280	89.120	75.768

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from October 1, 2010 to December 31, 2010

Site ID	MW-82	MW-58A	MW-59	MW-24	MW-64	MW-70
Date	10/28/10	10/25/10	1/0/00	1/0/00	1/0/00	1/0/00
Cations	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)
Calcium	40.1 2 19.0 0.9481 42.9	16.3 0.81337 44.6	13.1 0.65369 37.3	15.1 0.75349 37.7	24.8 1.23752 40.7	17.2 0.85828 45.8
Magnesium	24.3 2 11.4 0.93808 42.5	8.5 0.70027 38.4	8.3 0.68381 39.0	9.9 0.81794 41.0	17.0 1.39889 46.1	8.9 0.73401 39.2
Potassium	39.1 1 1.6 0.03964 1.8	1.0 0.02509 1.4	1.0 0.0254 1.4	0.9 0.02386 1.2	1.7 0.04271 1.4	1.4 0.03453 1.8
Sodium	23.0 1 6.5 0.28143 12.7	5.3 0.23141 12.7	5.5 0.2375 13.5	5.9 0.25751 12.9	7.5 0.32667 10.8	5.6 0.24489 13.1
Iron	55.8 2 0.01 0.00036 0.0	1.01 0.03617 2.0	4.14 0.14826 8.5	3.77 0.13501 6.8	0.52 0.01877 0.6	0.01 0.00036 0.0
Manganese	54.9 2 0.00 3.6E-05 0.0	0.33 0.01216 0.7	0.10 0.00371 0.2	0.15 0.00546 0.3	0.21 0.00761 0.3	0.03 0.00116 0.1
Ammonia-N	14.0 1 0.01 0.00071 0.0	0.07 0.00513 0.3	0.01 0.001 0.1	0.04 0.00317 0.2	0.07 0.00527 0.2	0.02 0.00107 0.1
Total Cations (meq/L)	2.2	1.8	1.8	2.0	3.0	1.9
Anions						
Alkalinity, Total	85	75	63	73	101	74
Carbonate	60.0 2 0.064 0.00213 0.1	0.2469 0.00823 0.4	0.0418 0.00139 0.1	0.0517 0.00172 0.1	0.0621 0.00207 0.1	0.1544 0.00515 0.3
Bicarbonate	61.0 1 103.08 1.68961 76.4	91.12 1.49355 76.8	77.26 1.26642 73.2	89.32 1.46405 75.8	123.09 2.01763 64.3	90.33 1.48063 75.4
Chloride	35.5 1 5.2 0.14583 6.6	3.4 0.09647 5.0	3.8 0.10718 6.2	4.1 0.11452 5.9	3.1 0.08829 2.8	3.5 0.09929 5.1
Nitrate-N	14.0 1 1.16 0.08282 3.7	0.01 0.00079 0.0	0.01 0.00071 0.0	0.01 0.00071 0.0	0.02 0.00164 0.1	0.03 0.00207 0.1
Sulfate	96.1 2 14.0 0.29149 13.2	16.6 0.34563 17.8	17.0 0.35395 20.5	16.8 0.34979 18.1	49.4 1.02855 32.8	18.1 0.37686 19.2
Total Anions (meq/L)	2.2	1.9	1.7	1.9	3.1	2.0
Total Ions (meq/L)	4.4	3.8	3.5	3.9	6.2	3.8
Cation/Anion Ratio	1.00	0.94	1.01	1.03	0.97	0.95
Percent Difference	-0.1	-3.2	0.7	1.7	-1.6	-2.3
TRILINEAR DIAGRAM DATA						
sum (Ca, Mg, Na+K)	2.21	1.77	1.60	1.85	3.01	1.87
Calcium	42.95	45.95	40.85	40.67	41.17	45.86
Magnesium	42.50	39.56	42.73	44.15	46.54	39.22
Sodium + Potassium	14.55	14.49	16.43	15.19	12.29	14.93
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	2.13	1.94	1.73	1.93	3.14	1.96
Sulfate	13.691	17.780	20.472	18.123	32.793	19.209
Chloride	6.849	4.963	6.199	5.933	2.815	5.061
Bicarbonate + Carbonate	79.460	77.257	73.328	75.944	64.393	75.731

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from October 1, 2010 to December 31, 2010

Site ID	MW-77	MW-72	MW-69	MW-100	MW-93	MW-95
Date	1/0/00	1/0/00	1/0/00	1/0/00	1/0/00	1/0/00
Cations	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Calcium	26.0	24.6	27.1	25.2	33.7	19.3
Magnesium	14.0	14.8	12.3	15.0	17.3	10.7
Potassium	1.6	1.8	1.6	2.0	1.6	1.3
Sodium	8.5	7.0	7.3	8.9	8.9	6.2
Iron	0.01	2.09	0.03939	1.86	0.01	0.01
Manganese	0.02	0.26	0.00663	0.21	0.01067	0.11
Ammonia-N	0.01	0.00121	0.00107	0.01	0.00358	0.02
Total Cations (meq/L)	2.9	2.9	2.8	3.0	3.5	2.2
Anions	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Alkalinity, Total	130	114	122	120	97	85
Carbonate	0.0939	0.1189	0.00396	0.0535	0.00417	0.1816
Bicarbonate	158.41	138.84	2.42994	146.29	1.94354	103.82
Chloride	4.7	4.0	5.0	2.9	3.1	5.6
Nitrate-N	0.85	0.01	0.00071	0.01	0.00071	0.01
Sulfate	11.7	26.8	14.3	22.8	77.8	15.7
Total Anions (meq/L)	3.0	3.0	2.9	3.0	3.7	2.2
Total Ions (meq/L)	5.9	5.8	5.7	6.0	7.2	4.3
Cation/Anion Ratio	0.94	0.98	0.96	1.02	0.97	0.98
Percent Difference	-3.0	-1.2	-1.9	0.8	-1.5	-0.9
TRILINEAR DIAGRAM DATA						
sum (Ca, Mg, Na+K)	2.86	2.80	2.72	2.93	3.53	2.15
Calcium	45.38	43.88	49.66	42.91	47.61	44.87
Magnesium	40.30	43.54	37.17	42.12	40.30	41.02
Sodium + Potassium	14.32	12.58	13.18	14.97	12.08	14.12
	100.0	100.0				
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	2.97	2.95	2.88	2.96	3.66	2.19
Sulfate	8.189	18.907	10.341	16.057	44.312	14.915
Chloride	4.428	3.852	4.928	2.776	2.407	7.168
Bicarbonate + Carbonate	87.384	77.242	84.732	81.167	53.280	77.917

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Upgradient GW Monitoring Wells

Data Collected from October 1, 2010 to December 31, 2010

Site ID	MW-84	MW-81	MW-21	MW-73	MW-99
Date	1/0/00	1/0/00	1/0/00	1/0/00	1/0/00
Cations	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)
Calcium	40.1 2 10.9 0.54391 36.0	11.3 0.56387 44.1	9.1 0.45609 36.6	13.0 0.6487 45.6	9.0 0.4476 36.9
Magnesium	24.3 2 8.4 0.68957 45.7	5.7 0.46492 36.3	5.5 0.4534 36.4	6.3 0.5143 36.1	4.0 0.32586 26.8
Potassium	39.1 1 0.9 0.02187 1.4	0.7 0.01862 1.5	1.0 0.02547 2.0	0.8 0.02092 1.5	0.9 0.02189 1.8
Sodium	23.0 1 5.8 0.25316 16.8	5.3 0.23141 18.1	5.4 0.23445 18.8	5.5 0.2388 16.8	9.5 0.41149 33.9
Iron	55.8 2 0.01 0.00036 0.0	0.01 0.00036 0.0	2.07 0.07413 5.9	0.01 0.00036 0.0	0.04 0.00125 0.1
Manganese	54.9 2 0.00 9.2E-05 0.0	0.00 3.6E-05 0.0	0.07 0.00253 0.2	0.00 3.6E-05 0.0	0.07 0.00237 0.2
Ammonia-N	14.0 1 0.01 0.00071 0.0	0.01 0.00071 0.1	0.01 0.00079 0.1	0.01 0.00071 0.1	0.05 0.0037 0.3
Total Cations (meq/L)	1.5	1.3	1.2	1.4	1.2
Anions					
Alkalinity, Total	60	48	52	56	52
Carbonate	60.0 2 0.0238 0.00079 0.0	0.0562 0.00187 0.1	0.1782 0.00594 0.5	0.0392 0.00131 0.1	0.27 0.009 0.7
Bicarbonate	61.0 1 73.03 1.19703 73.8	58.45 0.95798 69.0	62.83 1.0299 84.3	67.63 1.10853 72.0	62.89 1.03084 80.7
Chloride	35.5 1 3.6 0.10154 6.3	2.8 0.07785 5.6	2.8 0.07926 6.5	3.3 0.09421 6.1	2.9 0.08208 6.4
Nitrate-N	14.0 1 0.66 0.04698 2.9	1.61 0.11494 8.3	0.01 0.00071 0.1	2.00 0.14279 9.3	0.03 0.00186 0.1
Sulfate	96.1 2 13.2 0.27484 17.0	11.3 0.23528 17.0	5.1 0.10535 8.6	9.2 0.19238 12.5	7.4 0.15387 12.0
Total Anions (meq/L)	1.6	1.4	1.2	1.5	1.3
Total Ions (meq/L)	3.1	2.7	2.5	3.0	2.5
Cation/Anion Ratio	0.93	0.92	1.02	0.93	0.95
Percent Difference	-3.6	-4.0	1.0	-3.9	-2.5
TRILINEAR DIAGRAM DATA					
sum (Ca, Mg, Na+K)	1.51	1.28	1.17	1.42	1.21
Calcium	36.06	44.09	39.00	45.60	37.09
Magnesium	45.71	36.36	38.77	36.15	27.00
Sodium + Potassium	18.23	19.55	22.23	18.26	35.91
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	1.57	1.27	1.22	1.40	1.28
Sulfate	17.459	18.482	8.632	13.777	12.060
Chloride	6.450	6.116	6.494	6.746	6.434
Bicarbonate + Carbonate	76.091	75.402	84.873	79.477	81.506

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Downgradient GW Monitoring Wells

Data Collected from October 1, 2010 to December 31, 2010

Site ID	MW-66	MW-67	MW-80	MW-68	MW-74
Date	10/20/10	10/21/10	10/28/10	10/25/10	10/21/10
Cations					
Calcium	mg/L 20.8	mg/L 26.1	mg/L 23.8	mg/L 30.5	mg/L 38.0
	meq/L 1.03792	meq/L 1.3024	meq/L 1.18762	meq/L 1.52196	meq/L 1.89621
	%(meq) 37.9	%(meq) 45.4	%(meq) 46.1	%(meq) 45.5	%(meq) 40.7
Magnesium	mg/L 24.3	mg/L 14.3	mg/L 12.1	mg/L 16.1	mg/L 26.2
	meq/L 1.3166	meq/L 1.17671	meq/L 0.99568	meq/L 1.32483	meq/L 2.15593
	%(meq) 48.1	%(meq) 41.0	%(meq) 38.6	%(meq) 39.6	%(meq) 46.3
Potassium	mg/L 39.1	mg/L 1.5	mg/L 1.6	mg/L 1.7	mg/L 2.2
	meq/L 0.03248	meq/L 0.0376	meq/L 0.0399	meq/L 0.04271	meq/L 0.0555
	%(meq) 1.2	%(meq) 1.3	%(meq) 1.5	%(meq) 1.3	%(meq) 1.2
Sodium	mg/L 23.0	mg/L 8.0	mg/L 6.7	mg/L 8.2	mg/L 10.1
	meq/L 0.34755	meq/L 0.34581	meq/L 0.29187	meq/L 0.35842	meq/L 0.43933
	%(meq) 12.7	%(meq) 12.1	%(meq) 11.3	%(meq) 10.7	%(meq) 9.4
Iron	mg/L 55.8	mg/L 0.1	mg/L 1.5	mg/L 2.4	mg/L 2.8
	meq/L 0.00036	meq/L 0.00248	meq/L 0.05408	meq/L 0.08487	meq/L 0.10063
	%(meq) 0.0	%(meq) 0.1	%(meq) 0.3	%(meq) 0.3	%(meq) 0.1
Manganese	mg/L 54.9	mg/L 0.1	mg/L 0.2	mg/L 0.3	mg/L 0.1
	meq/L 3.6E-05	meq/L 0.00252	meq/L 0.00863	meq/L 0.00939	meq/L 0.00532
	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0
Ammonia-N	mg/L 14.0	mg/L 0.0	mg/L 0.0	mg/L 0.0	mg/L 0.0
	meq/L 0.00071	meq/L 0.00071	meq/L 0.00086	meq/L 0.00129	meq/L 0.00079
	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0
Total Cations (meq/L)	2.7	2.9	2.6	3.3	4.7
Anions					
Alkalinity, Total	mg/L 116	mg/L 106	mg/L 82.8	mg/L 148	mg/L 169
Carbonate	meq/L 0.0713	meq/L 0.0028	meq/L 0.0753	meq/L 0.00527	meq/L 0.00309
	%(meq) 0.1	%(meq) 0.1	%(meq) 0.1	%(meq) 0.2	%(meq) 0.1
Bicarbonate	mg/L 61.0	mg/L 129.15	mg/L 100.86	mg/L 180.24	mg/L 205.99
	meq/L 2.31727	meq/L 2.11688	meq/L 1.65324	meq/L 2.95429	meq/L 3.3764
	%(meq) 81.4	%(meq) 70.2	%(meq) 61.2	%(meq) 86.9	%(meq) 70.0
Chloride	mg/L 35.5	mg/L 4.6	mg/L 5.3	mg/L 2.9	mg/L 30.9
	meq/L 0.22537	meq/L 0.12862	meq/L 0.14893	meq/L 0.08152	meq/L 0.87158
	%(meq) 7.9	%(meq) 4.3	%(meq) 5.5	%(meq) 2.4	%(meq) 18.1
Nitrate-N	mg/L 14.0	mg/L 0.6	mg/L 0.0	mg/L 0.0	mg/L 0.0
	meq/L 0.03684	meq/L 0.04512	meq/L 0.00071	meq/L 0.00071	meq/L 0.00071
	%(meq) 1.3	%(meq) 1.5	%(meq) 0.0	%(meq) 0.0	%(meq) 0.0
Sulfate	mg/L 96.1	mg/L 34.6	mg/L 43.1	mg/L 17.1	mg/L 27.4
	meq/L 0.26651	meq/L 0.7204	meq/L 0.89738	meq/L 0.35604	meq/L 0.57049
	%(meq) 9.4	%(meq) 23.9	%(meq) 33.2	%(meq) 10.5	%(meq) 11.8
Total Anions (meq/L)	2.8	3.0	2.7	3.4	4.8
Total Ions (meq/L)	5.6	5.9	5.3	6.7	9.5
Cation/Anion Ratio	0.96	0.95	0.95	0.98	0.97
Percent Difference	-2.0	-2.5	-2.4	-0.8	-1.8
TRILINEAR DIAGRAM DATA					
sum (Ca, Mg, Na+K)	2.73	2.86	2.52	3.25	4.55
Calcium	37.96	45.50	47.22	46.86	41.70
Magnesium	48.15	41.11	39.59	40.79	47.41
Sodium + Potassium	13.90	13.39	13.19	12.35	10.88
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	2.81	2.97	2.70	3.40	4.82
Sulfate	9.479	24.267	33.211	10.481	11.832
Chloride	8.016	4.333	5.512	2.400	18.077
Bicarbonate + Carbonate	82.505	71.401	61.277	87.120	70.091
	100.0	100.0	100.0	100.0	100.0

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Downgradient GW Monitoring Wells

Data Collected from October 1, 2010 to December 31, 2010

Site ID	MW-75	MW-87	MW-85	MW-86	MW-88
Date	10/21/10	10/21/10	10/28/10	10/29/10	10/22/10
Cations	mg/L	mg/L	mg/L	mg/L	mg/L
Calcium	23.0	34.6	20.7	13.6	8.9
Magnesium	17.7	23.2	12.9	9.3	6.5
Potassium	1.7	2.1	1.3	1.2	0.8
Sodium	8.4	9.2	7.5	6.4	5.6
Iron	1.9	3.1	0.0	0.0	0.0
Manganese	0.1	0.3	0.0	0.0	0.0
Ammonia-N	0.0	0.0	0.0	0.0	0.0
Total Cations (meq/L)	3.1	4.2	2.5	1.8	1.2
Anions	mg/L	mg/L	mg/L	mg/L	mg/L
Alkalinity, Total	97.1	91.2	88.7	66.3	52.8
Carbonate	0.0903	0.0477	0.0545	0.0537	0.0551
Bicarbonate	118.28	111.17	108.10	80.78	64.30
Chloride	7.4	4.3	6.7	4.4	2.3
Nitrate-N	0.0	0.0	0.1	0.2	0.6
Sulfate	44.3	115.0	29.9	17.4	6.6
Total Anions (meq/L)	3.1	4.3	2.6	1.8	1.3
Total Ions (meq/L)	6.2	8.6	5.0	3.6	2.5
Cation/Anion Ratio	1.00	0.97	0.95	0.96	0.96
Percent Difference	0.2	-1.5	-2.8	-2	-2.2
TRILINEAR DIAGRAM DATA					
sum (Ca, Mg, Na+K)	3.01	4.09	2.45	1.75	1.24
Calcium	38.08	42.22	42.10	38.70	35.76
Magnesium	48.33	46.69	43.27	43.54	42.98
Sodium + Potassium	13.58	11.09	14.63	17.76	21.26
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	3.07	4.34	2.58	1.81	1.26
Sulfate	30.006	55.196	24.088	20.001	10.935
Chloride	6.827	2.763	7.280	6.805	5.177
Bicarbonate + Carbonate	63.167	42.041	68.632	73.194	83.889

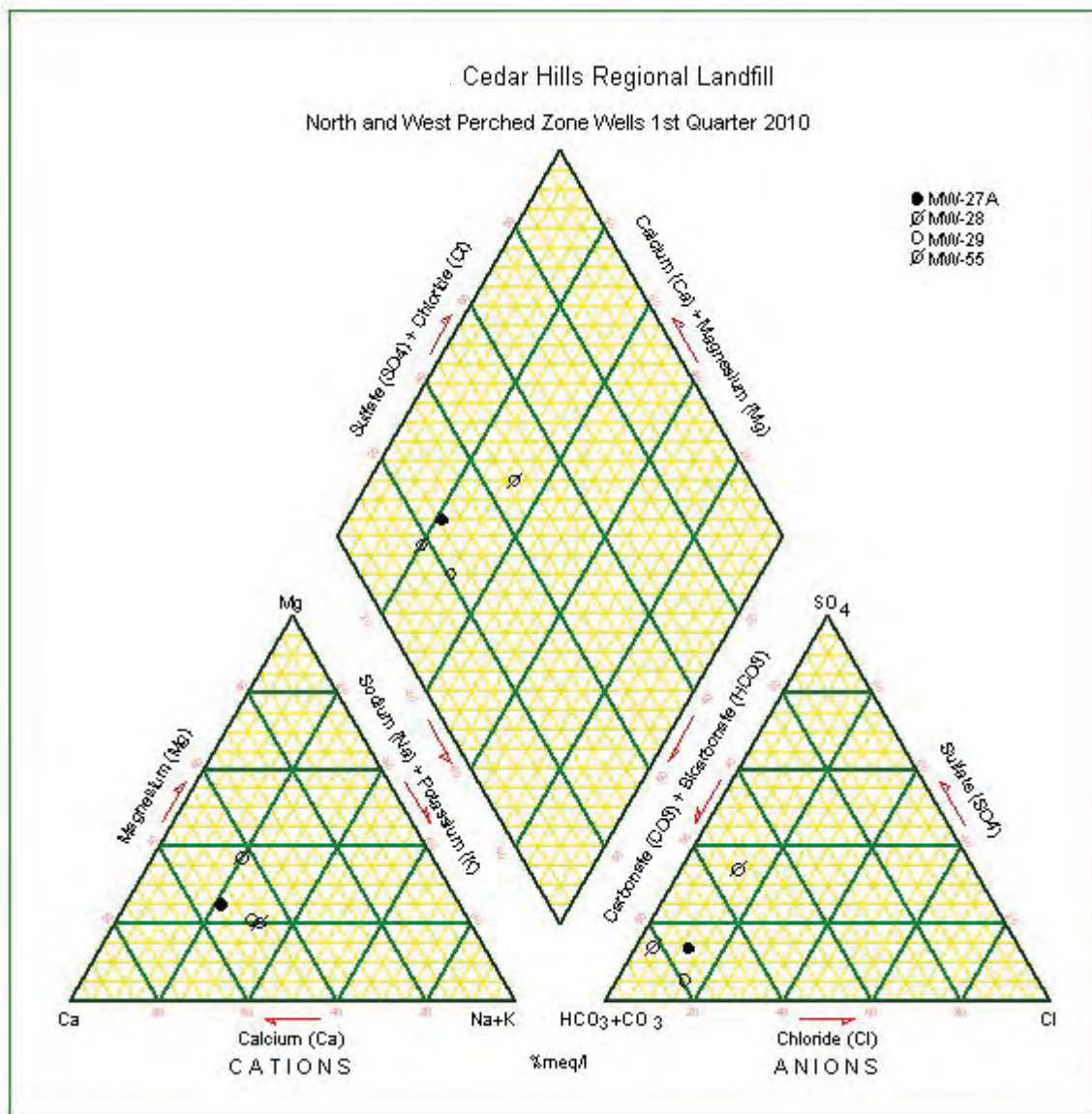
Ion Balance Calculations

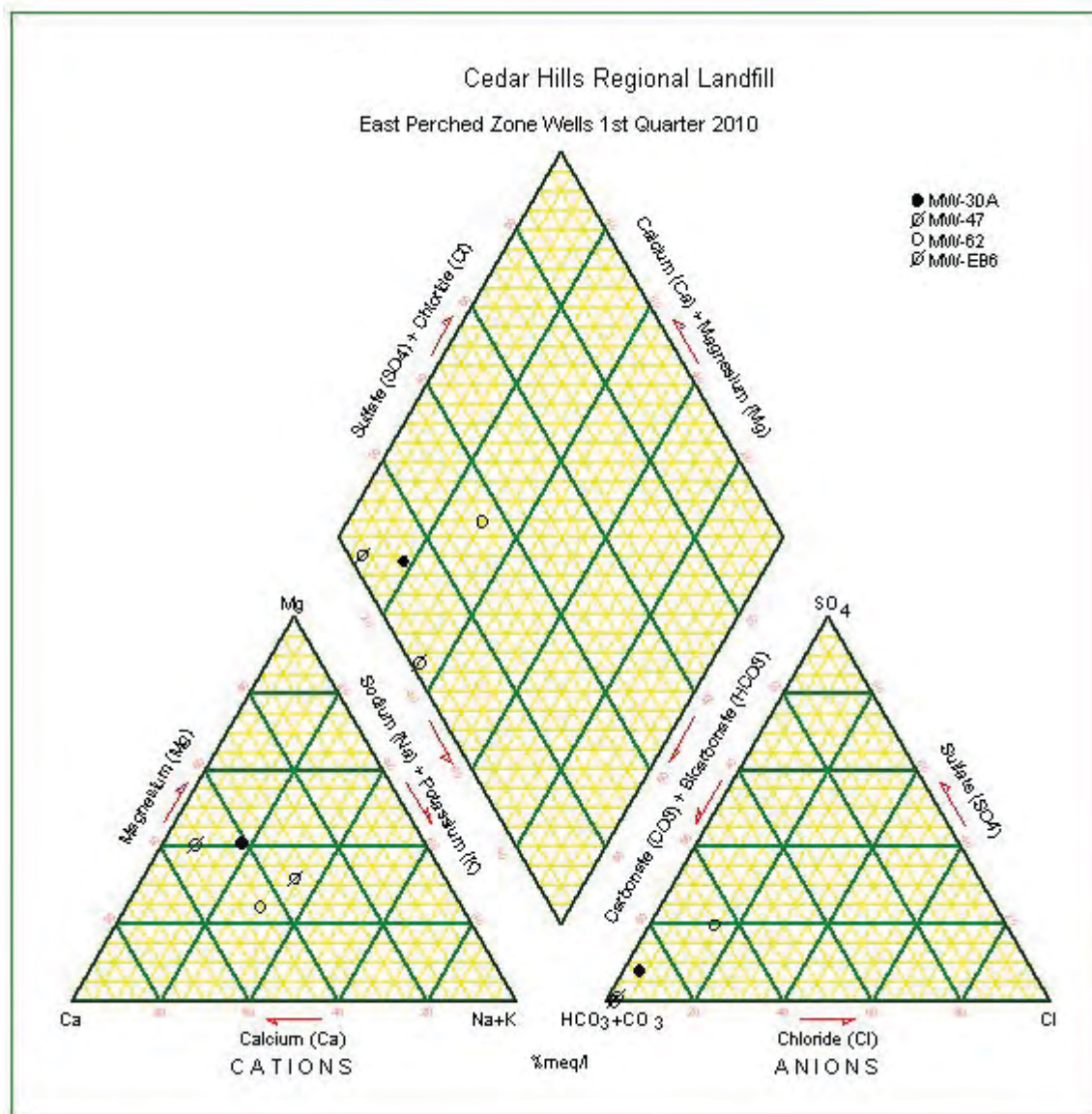
Cedar Hills Landfill Regional Aquifer Downgradient GW Monitoring Wells

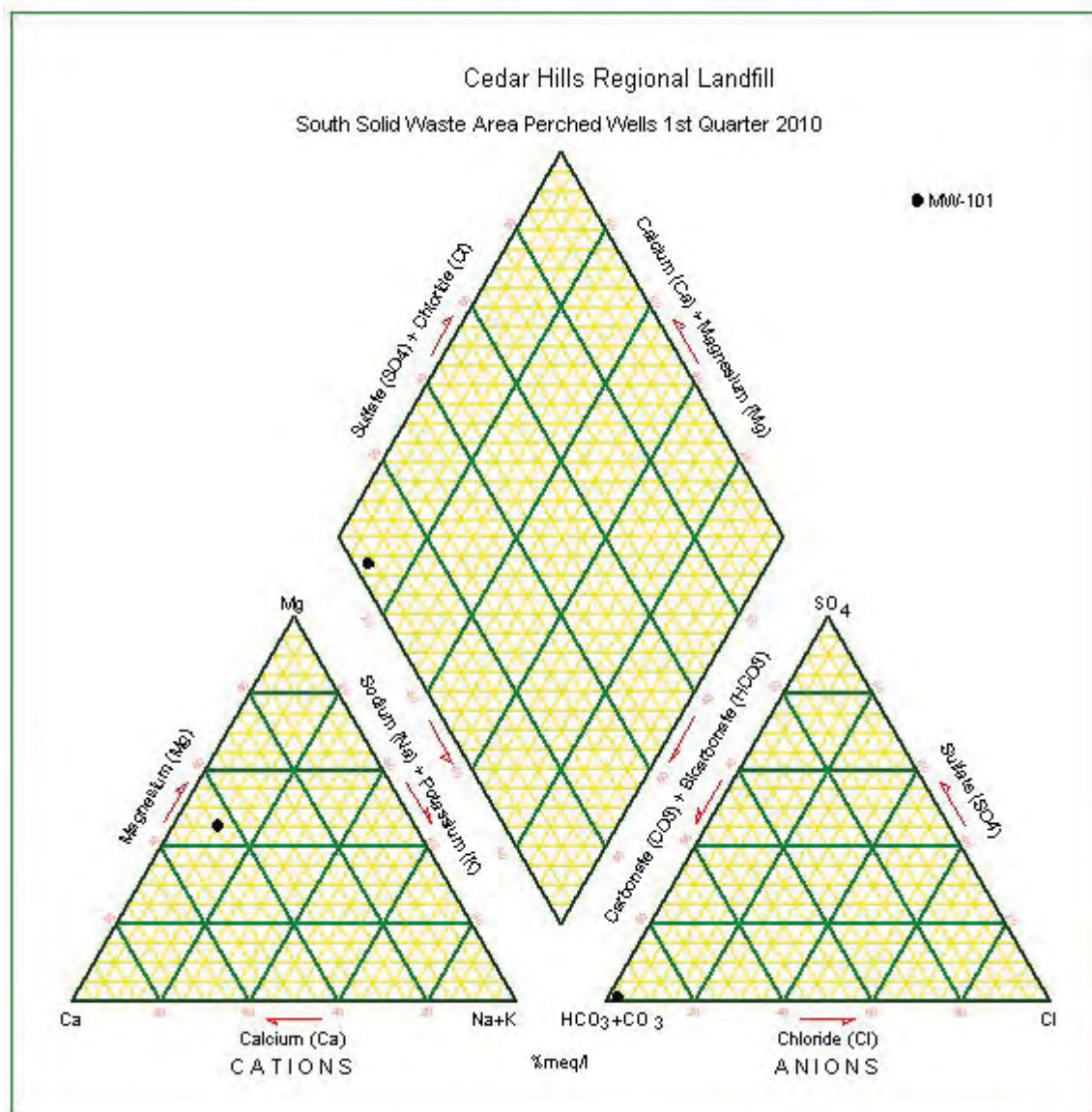
Data Collected from October 1, 2010 to December 31, 2010

Site ID	MW-89	MW-90	MW-91	MW-43
Date	10/22/10	10/15/10	10/22/10	10/12/10
Cations	MW			
Calcium	40.1 2	mg/L meq/L % (meq)	mg/L meq/L % (meq)	mg/L meq/L % (meq)
	13.8 0.68862 34.7	16.4 0.81836 41.4	21.1 1.05289 40.2	12.8 0.63872 36.3
Magnesium	24.3 2	9.8 0.80806 40.9	13.5 1.11088 42.4	9.3 0.76692 43.6
Potassium	39.1 1	1.5 0.03785 1.9	1.6 0.04169 1.6	1.3 0.03351 1.9
Sodium	23.0 1	9.1 0.39713 20.0	7.3 0.31797 12.1	6.3 0.2749 15.6
Iron	55.8 2	0.8 0.02725 1.4	2.4 0.08738 3.3	1.0 0.03452 2.0
Manganese	54.9 2	0.3 0.00921 0.5	0.2 0.00874 0.3	0.2 0.00761 0.4
Ammonia-N	14.0 1	0.0 0.00181 0.1	0.0 0.00107 0.0	0.0 0.00183 0.1
Total Cations (meq/L)	2.0	2.0	2.6	1.8
Anions				
Alkalinity, Total	78	69.3	128	70
Carbonate	60.0 2	0.1149 0.00383 0.2	0.1111 0.0037 0.1	0.1297 0.00432 0.2
Bicarbonate	61.0 1	94.93 1.55594 78.1	84.35 1.38254 68.1	85.14 1.39547 79.6
Chloride	35.5 1	3.2 0.09139 4.6	7.2 0.20168 5.8	2.7 0.07503 4.3
Nitrate-N	14.0 1	0.0 0.00071 0.0	0.0 0.00136 0.0	0.0 0.00071 0.0
Sulfate	96.1 2	16.4 0.34146 17.1	34.6 0.7204 20.7	13.3 0.27692 15.8
Total Anions (meq/L)	2.0	2.0	3.5	1.8
Total Ions (meq/L)	4.0	4.0	6.1	3.5
Cation/Anion Ratio	0.99	0.97	0.75	1.00
Percent Difference	-0.3	-1.3	-14.1	0.2
TRILINEAR DIAGRAM DATA				
sum (Ca, Mg, Na+K)	1.94	1.92	2.52	1.71
Calcium	35.41	42.58	41.72	37.26
Magnesium	42.23	42.04	44.02	44.74
Sodium + Potassium	22.37	15.38	14.25	17.99
		100.0	100.0	100.0
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	1.99	2.03	3.48	1.75
Sulfate	17.136	26.688	20.691	15.808
Chloride	4.586	4.992	5.792	4.283
Bicarbonate + Carbonate	78.277	68.320	73.516	79.909
		100.0	100.0	100.0

Cedar Hills Regional Landfill
North and West Perched Zone Wells 1st Quarter 2010

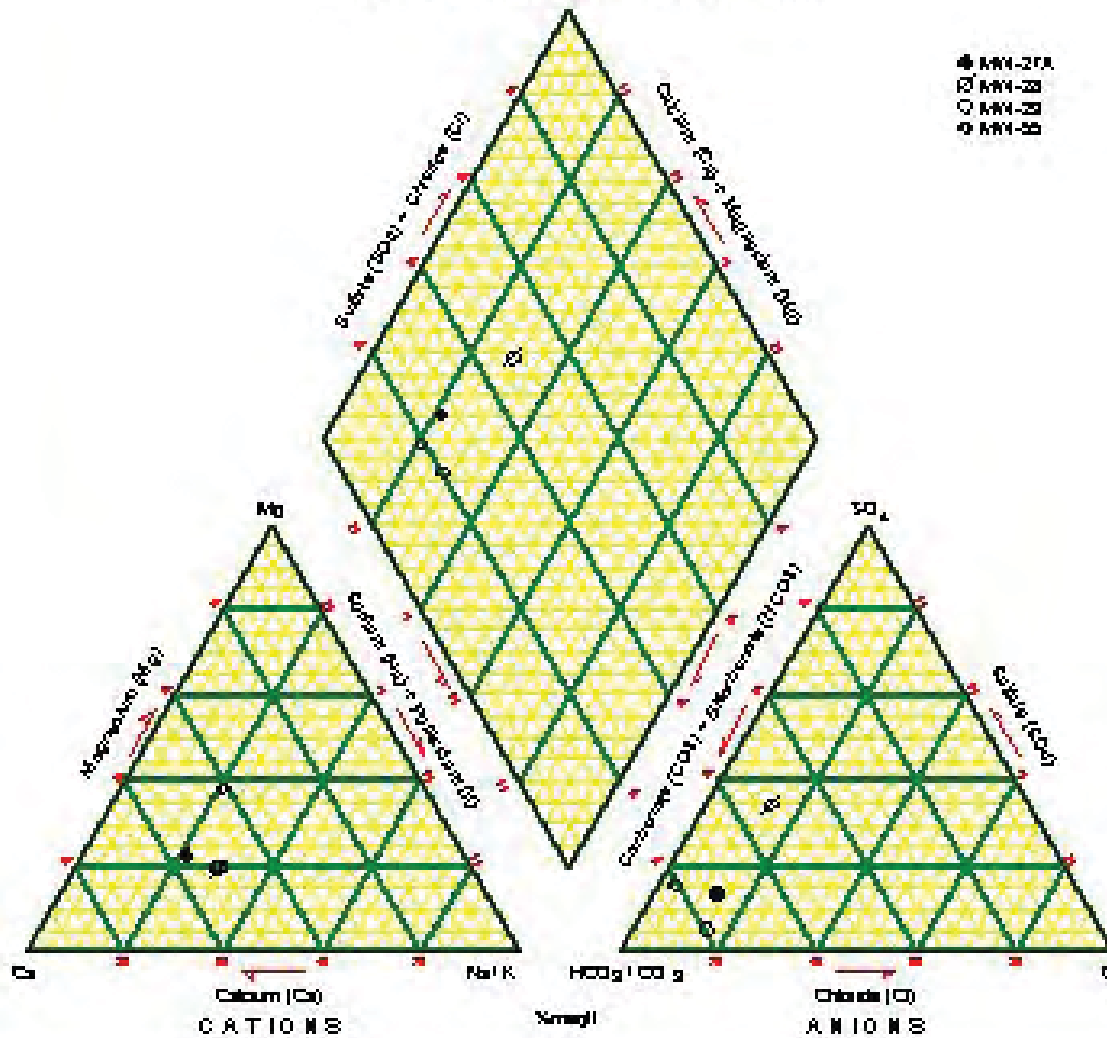




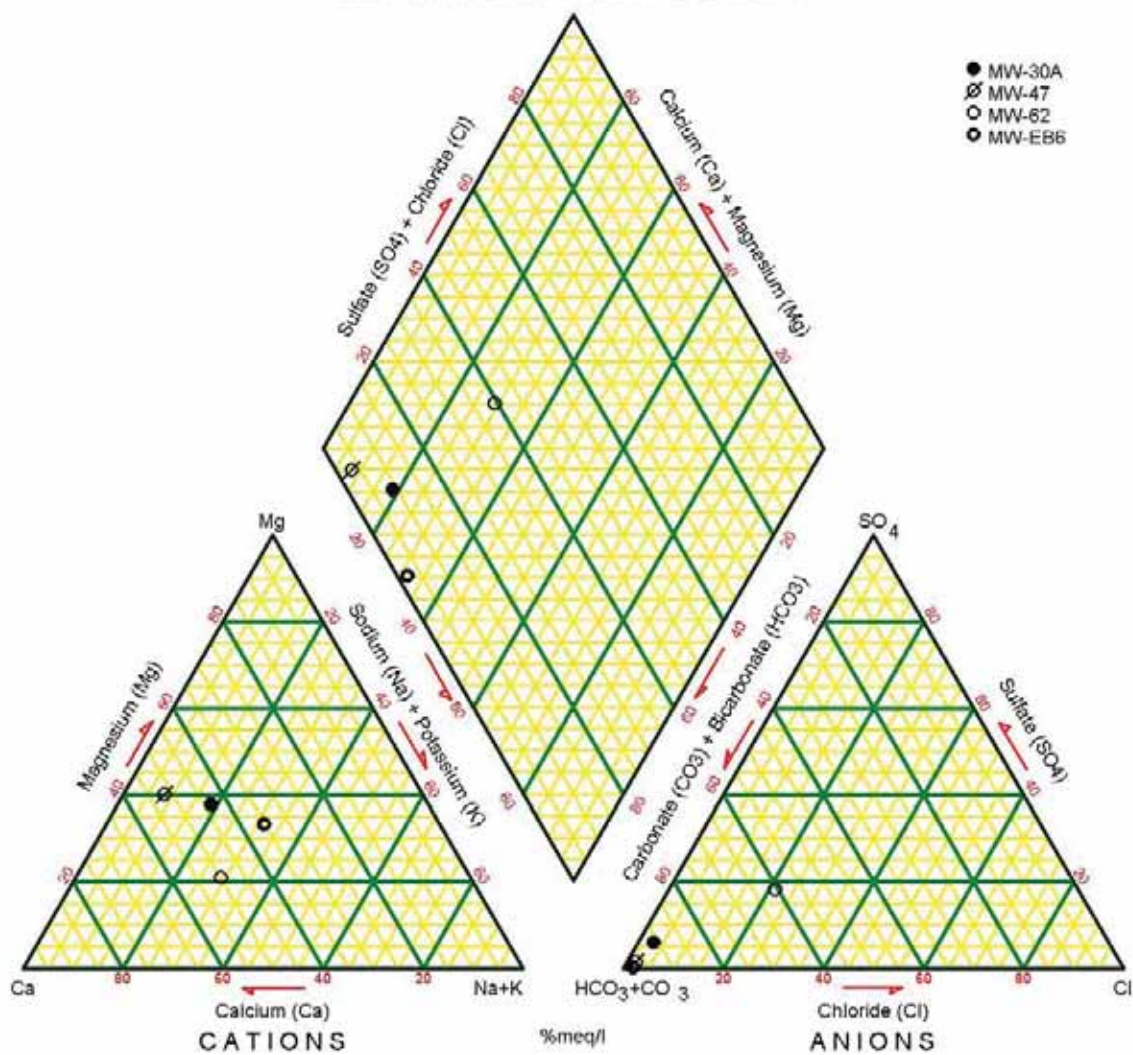


Cedar Hills Regional Landfill

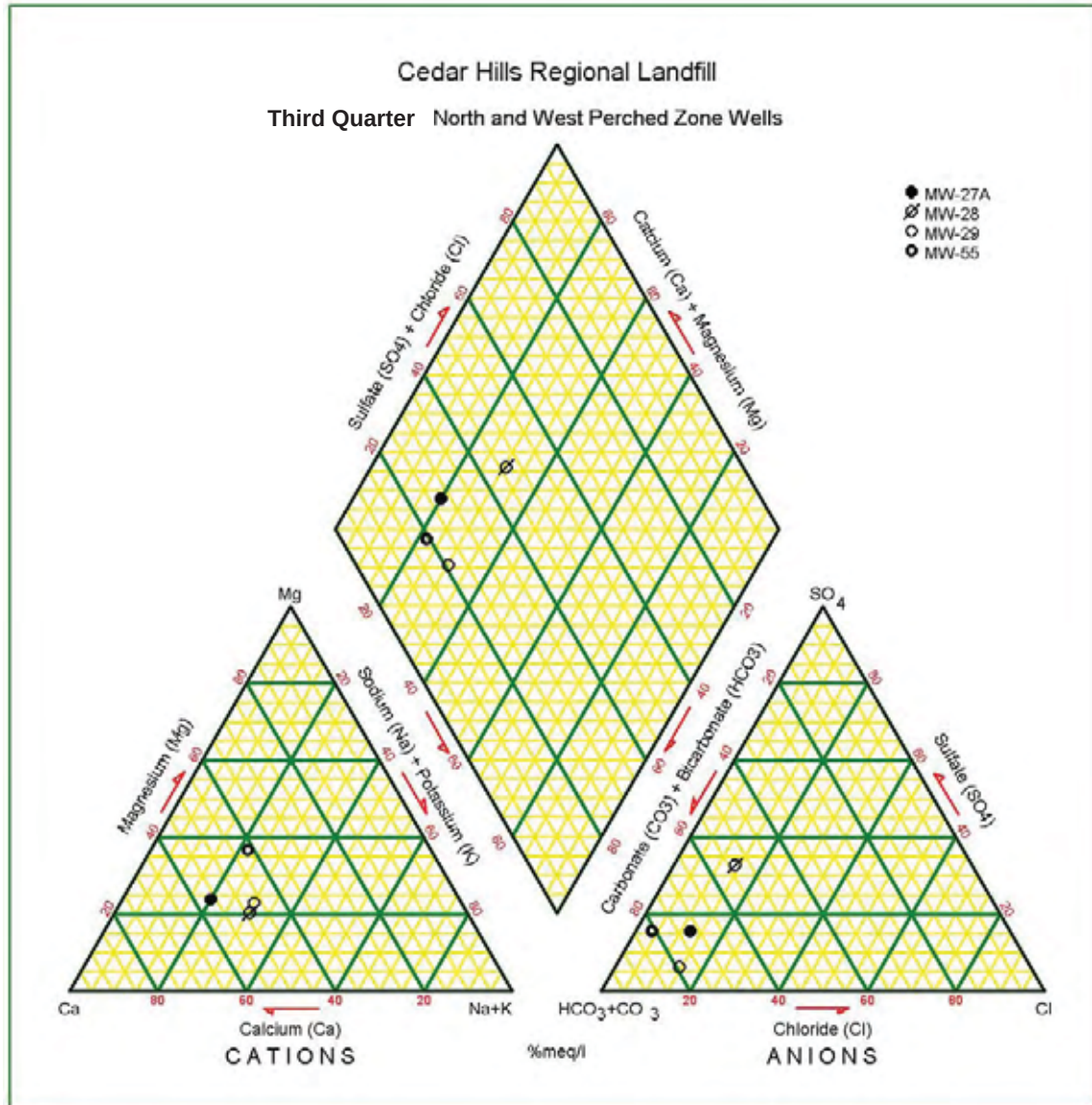
North and West Perched Wells 2nd Quarter 2010



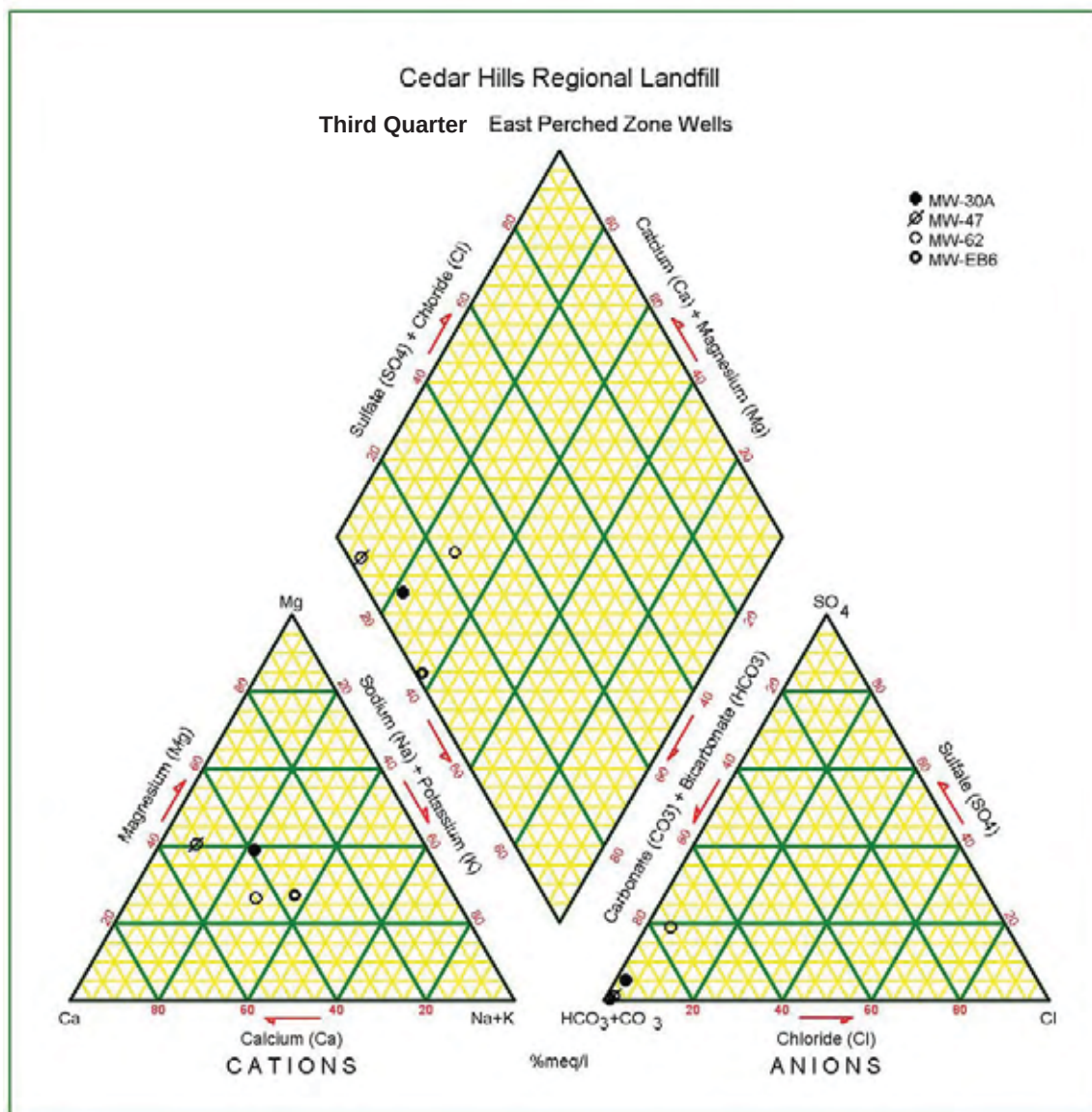
Cedar Hills Regional Landfill
East Perched Zone Wells 2nd Quarter 2010

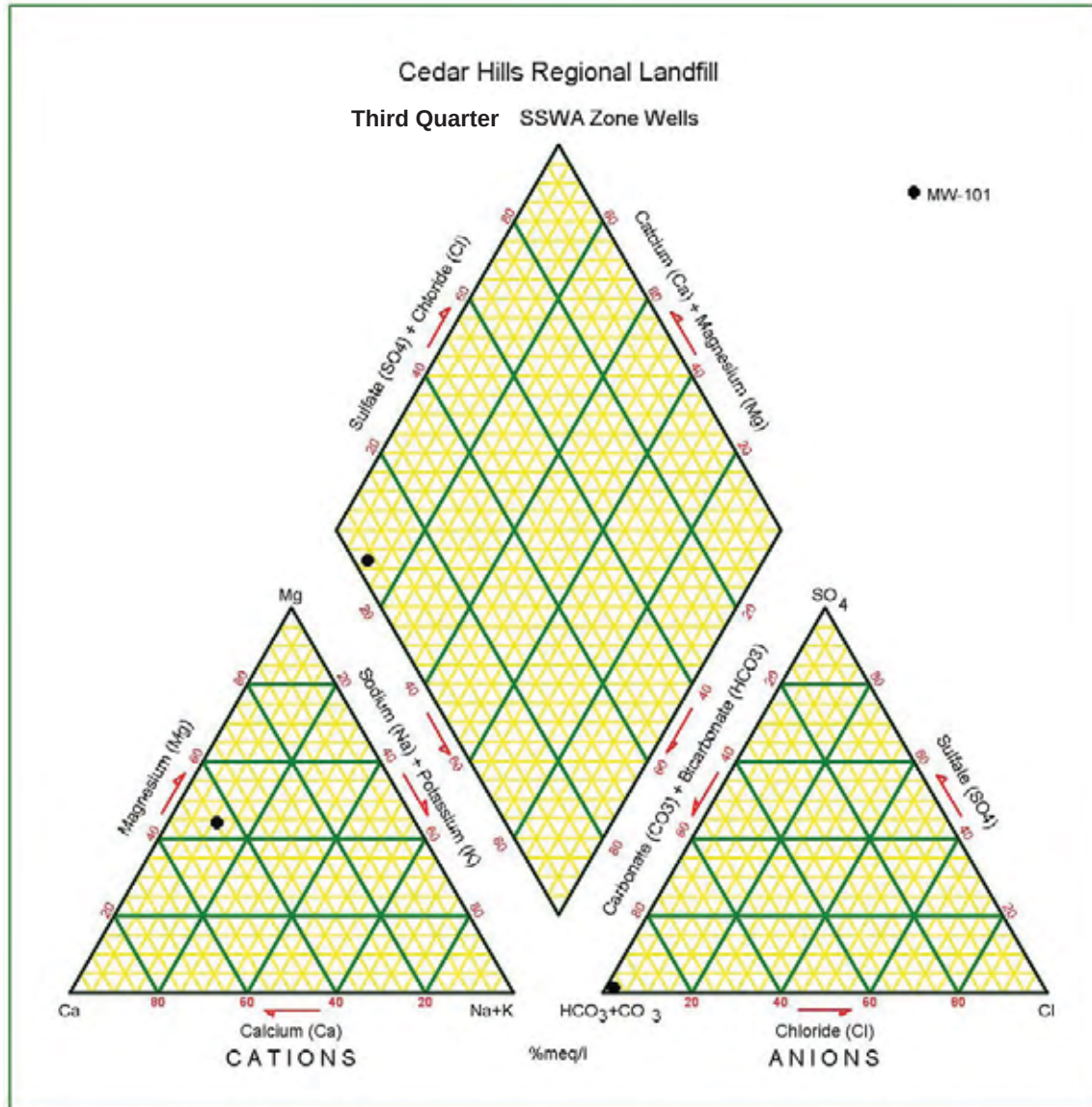


Cedar Hills Regional Landfill
Third Quarter North and West Perched Zone Wells



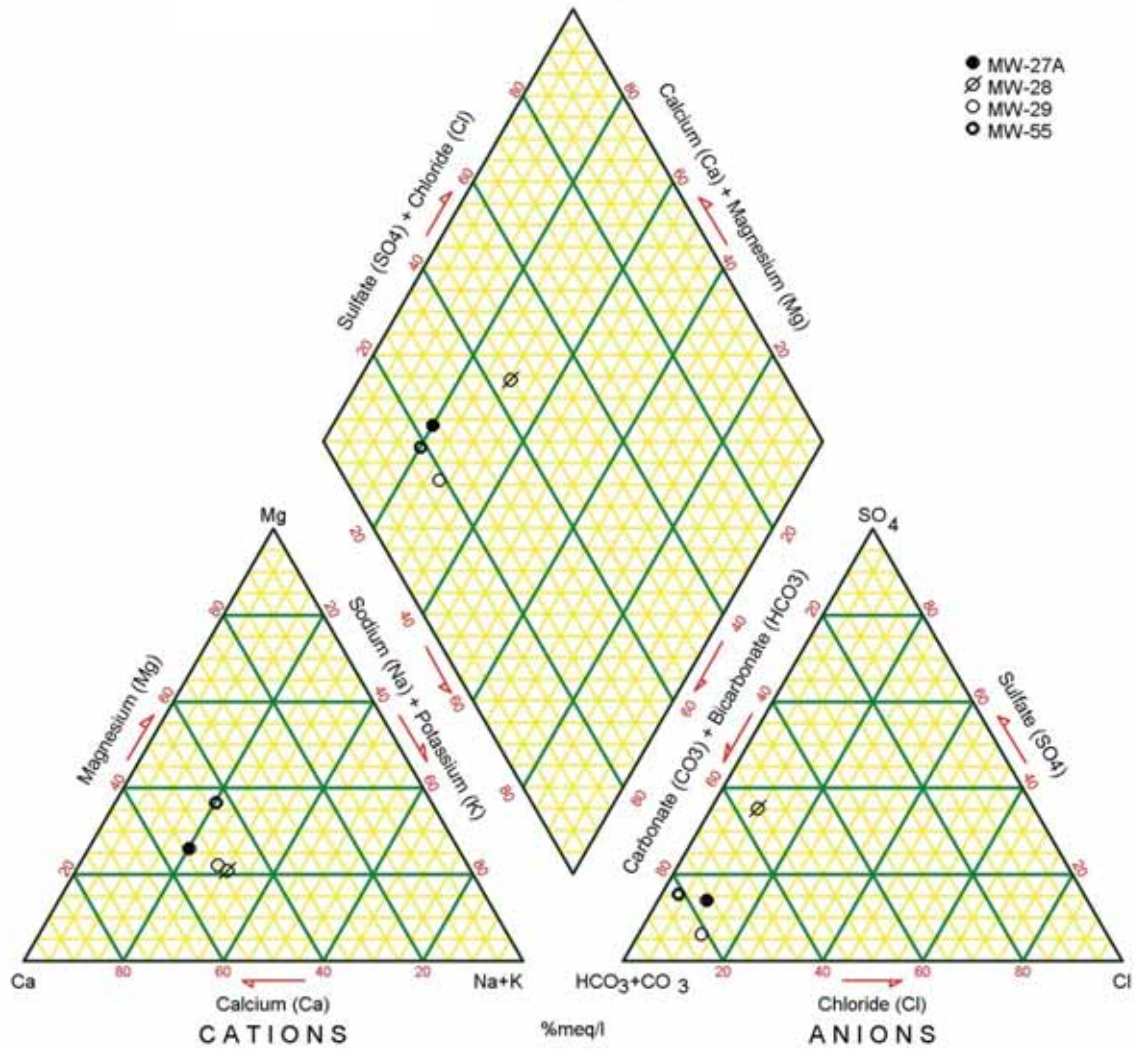
Cedar Hills Regional Landfill
Third Quarter East Perched Zone Wells



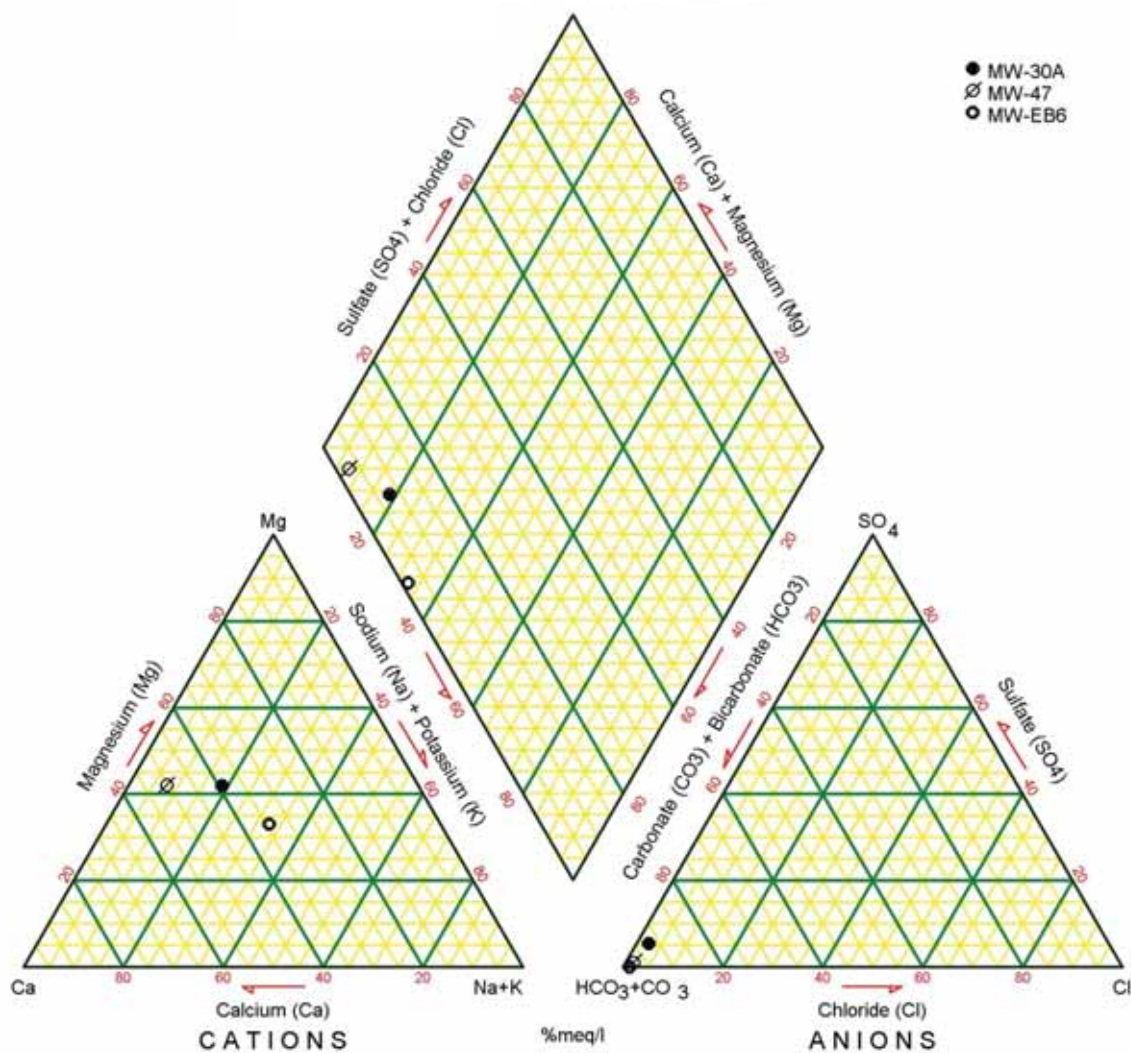


Cedar Hills Regional Landfill

Fourth Quarter Perched Zone North and West Wells



Cedar Hills Regional Landfill
Fourth Quarter East Perched Zone Wells



Cedar Hills Regional Landfill
Fourth Quarter SSWA Perched Zone Wells

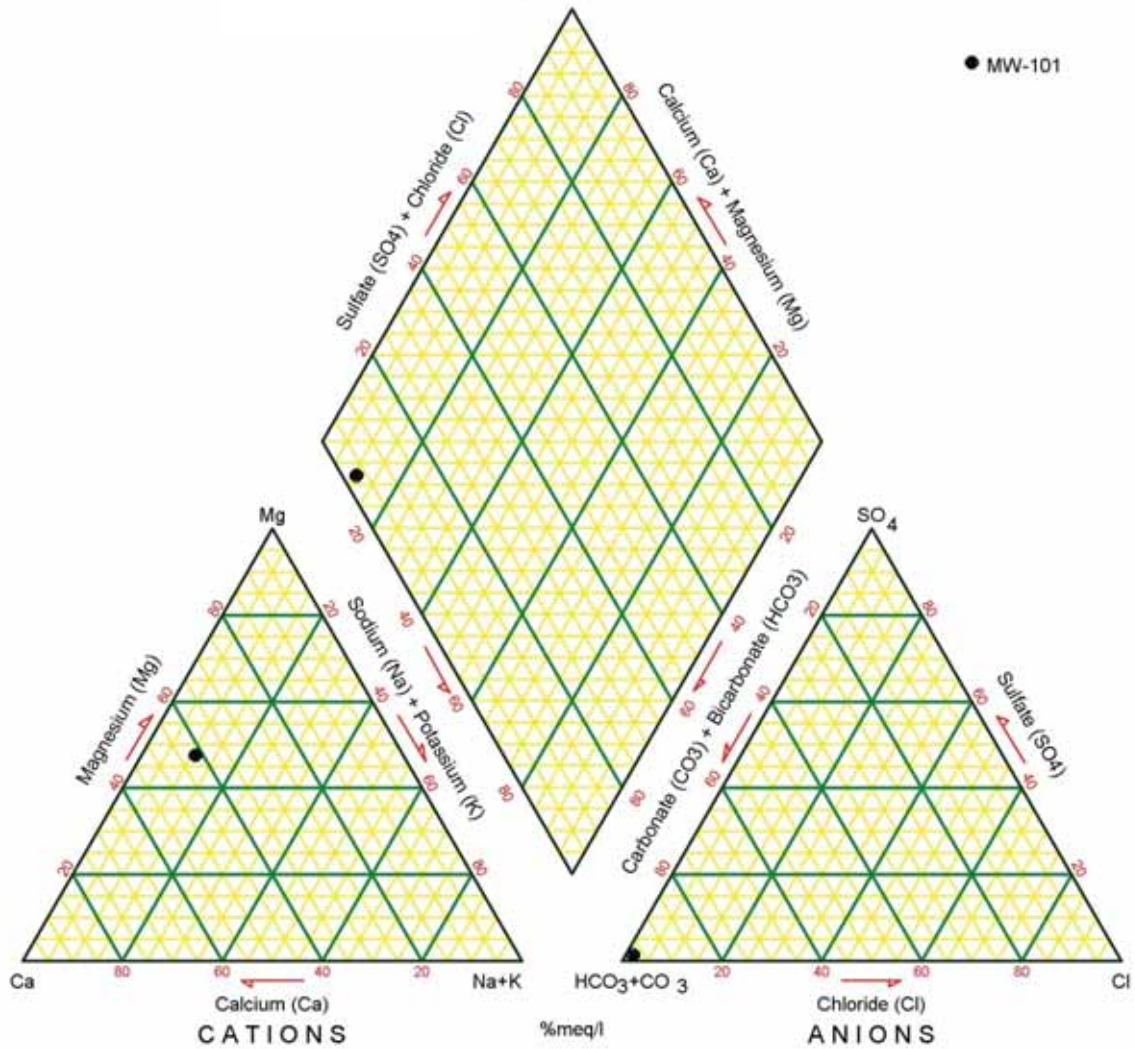


Table 7

**Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells**

Data Collected from December 1, 2009 to March 31, 2010

Site ID Date	MW	n	MW-27A 1/8/2010			MW-28 1/8/2010			MW-29 1/5/2010			MW-55 1/5/2010			MW-30A 1/6/2010		
			mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
Cations																	
Calcium	40.1	2	16.7	0.83333	53.3	9.1	0.45509	47.2	6.9	0.34182	48.5	11.9	0.59381	42.1	29.2	1.45709	41.2
Magnesium	24.3	2	4.8	0.39333	25.2	2.4	0.19502	20.2	1.8	0.14812	21.0	6.3	0.51841	36.8	17.7	1.45649	41.2
Potassium	39.1	1	2.6	0.06752	4.3	0.9	0.02397	2.5	0.5	0.01287	1.8	1.5	0.03939	2.8	1.7	0.04246	1.2
Sodium	23.0	1	6.0	0.26229	16.8	6.6	0.28752	29.8	4.6	0.19922	28.3	5.5	0.23793	16.9	13.3	0.57852	16.4
Iron	55.8	2	0.1	0.00179	0.1	0.1	0.00179	0.2	0.1	0.00179	0.3	0.3	0.01053	0.7	0.1	0.00179	0.1
Manganese	54.9	2	0.0	0.00113	0.1	0.0	3.6E-05	0.0	0.0	3.6E-05	0.0	0.2	0.00564	0.4	0.0	3.6E-05	0.0
Ammonia-N	14.0	1	0.1	0.00389	0.2	0.0	0.00086	0.1	0.0	0.00071	0.1	0.1	0.00434	0.3	0.0	0.00071	0.0
Total Cations (meq/L)				1.6			1.0			0.7			1.4			3.5	
Anions																	
Alkalinity, Total			59			26.4			26.8			66.5			160		
Carbonate	60.0	2	0.07386	0.00246	0.2	0.00118	3.9E-05	0.0	0.00125	4.2E-05	0.0	0.19493	0.0065	0.4	0.01634	0.00054	0.0
Bicarbonate	61.0	1	71.71	1.17536	71.8	32.21	0.52788	51.6	32.69	0.53588	66.0	80.73	1.3233	81.6	195.17	3.19897	86.6
Chloride	35.5	1	6.6	0.18701	11.4	4.5	0.12693	12.4	3.6	0.10211	12.6	2.2	0.06121	3.8	4.5	0.12721	3.4
Nitrate-N	14.0	1	0.8	0.05433	3.3	0.4	0.02749	2.7	1.9	0.13707	16.9	0.0	0.00071	0.0	1.1	0.0771	2.1
Sulfate	96.1	2	10.5	0.21862	13.3	16.4	0.34146	33.4	1.8	0.03727	4.6	11.0	0.22903	14.1	14.0	0.29149	7.9
Total Anions (meq/L)				1.6			1.0			0.8			1.6			3.7	
Total Ions (meq/L)				3.2			2.0			1.5			3.0			7.2	
Cation/Anion Ratio				0.95			0.94			0.87			0.87			0.96	
Percent Difference				-2.3			-3.0			-7.1			-7.0			-2.2	
TRILINEAR DIAGRAM DATA																	
sum (Ca, Mg, Na+K)				1.56			0.96			0.70			1.39			3.53	
Calcium					53.5			47.3		48.7				42.7		41.2	
Magnesium					25.3			20.3		21.1				37.3		41.2	
Sodium + Potassium					21.2			32.4		30.2				20.0		17.6	
sum (SO ₄ , Cl, HCO ₃ +CO ₃)				1.58			1.00			0.68			1.62			3.62	
Sulfate					13.8			34.3						14.1		8.1	
Chloride					11.8			12.7						3.8		3.5	
Bicarbonate + Carbonate					74.4			53.0		79.4				82.1		88.4	

Table 7

**Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells**

Data Collected from December 1, 2009 to March 31, 2010

Site ID Date	MW n	MW-47 1/6/2010			MW-62 1/6/2010			MW-EB6 2/3/2010			MW-101 2/2/2010		
		mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)
Cations													
Calcium	40.1 2	119.0	5.93812	51.5	19.1	0.95309	45.3	14.2	0.70858	28.3	79.4	3.96208	43.9
Magnesium	24.3 2	56.6	4.65748	40.4	6.3	0.51677	24.5	8.2	0.67229	26.8	49.7	4.08969	45.3
Potassium	39.1 1	4.8	0.12379	1.1	1.0	0.02478	1.2	1.3	0.03376	1.3	3.1	0.07903	0.9
Sodium	23.0 1	17.1	0.74381	6.5	14.0	0.60897	28.9	15.8	0.68726	27.4	18.6	0.80906	9.0
Iron	55.8 2	0.0	0.00133	0.0	0.1	0.00179	0.1	8.8	0.31515	12.6	0.6	0.02027	0.2
Manganese	54.9 2	1.6	0.05643	0.5	0.0	3.6E-05	0.0	0.9	0.03153	1.3	1.7	0.06298	0.7
Ammonia-N	14.0 1	0.1	0.00857	0.1	0.0	0.00071	0.0	0.8	0.05733	2.3	0.0	0.00093	0.0
Total Cations (meq/L)		11.5			2.1			2.5			9.0		
Anions													
Alkalinity, Total		640			70.8			102			426		
Carbonate	60.0 2	0.39347	0.01312	0.1	0.01858	0.00062	0.0	0.00657	0.00022	0.0	0.1731	0.00577	0.1
Bicarbonate	61.0 1	780.00	12.785	96.8	86.34	1.41517	58.4	124.43	2.03947	98.0	519.37	8.51295	96.6
Chloride	35.5 1	8.4	0.23806	1.8	11.0	0.31027	12.8	1.3	0.03723	1.8	6.2	0.17601	2.0
Nitrate-N	14.0 1	0.0	0.00071	0.0	3.7	0.26701	11.0	0.0	0.00093	0.0	0.0	0	0.0
Sulfate	96.1 2	8.5	0.17698	1.3	20.7	0.43099	17.8	0.2	0.00354	0.2	5.8	0.11972	1.4
Total Anions (meq/L)		13.2			2.4			2.1			8.8		
Total Ions (meq/L)		24.7			4.5			4.6			17.8		
Cation/Anion Ratio		0.87			0.87			1.20			1.02		
Percent Difference		-6.8			-7.0			9.3			1		
TRILINEAR DIAGRAM DATA													
sum (Ca, Mg, Na+K)		11.46			2.10			2.10			8.94		
Calcium			51.8			45.31			33.71			44.32	
Magnesium			40.6			24.57			31.98			45.75	
Sodium + Potassium			7.6			30.13			34.30			9.93	
sum (SO ₄ , Cl, HCO ₃ +CO ₃)		13.21			2.16			2.08			8.81		
Sulfate			1.3			20.0			0.2			1.4	
Chloride			1.8			14.4			1.8			2.0	
Bicarbonate + Carbonate			96.9			65.6			98.0			96.6	

Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells

Data Collected from April 1, 2010 to June 30, 2010

Site ID	Date	North and West Perched Wells											
		MW-27A 4/6/2010				MW-28 4/5/2010				MW-29 4/1/2010			
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)		mg/L	meq/L	%(meq)	
Calcium	40.1	2	8.7	0.43313	55.9	8.5	0.42265	50.9		7.4	0.36976	51.5	
Magnesium	24.3	2	2.1	0.1761	22.7	2.0	0.16458	19.8		1.7	0.14236	19.8	
Potassium	39.1	1	1.3	0.03274	4.2	0.9	0.02379	2.9		0.5	0.01368	1.9	
Sodium	23.0	1	3.0	0.13093	16.9	5.0	0.21836	26.3		4.4	0.19008	26.5	
Iron	55.8	2	0.0	0.00036	0.0	0.0	0.00036	0.0		0.0	0.00068	0.1	
Manganese	54.9	2	0.0	0.00038	0.0	0.0	3.6E-05	0.0		0.0	3.6E-05	0.0	
Ammonia-N	14.0	1	0.0	0.00157	0.2	0.0	0.00071	0.1		0.0	0.00071	0.1	
Total Cations (meq/L)				0.8			0.8				0.7		
Anions													
Alkalinity, Total			29			23.8				27.1			65
Carbonate	60.0	2	1.7E-09	5.7E-11	0.0	1.4E-09	4.8E-11	0.0		0.00409	0.00014	0.0	
Bicarbonate	61.0	1	34.77	0.56991	66.7	29.04	0.47593	50.7		33.05	0.54178	66.1	
Chloride	35.5	1	3.5	0.09872	11.6	4.3	0.12157	13.0		3.6	0.10182	12.4	
Nitrate-N	14.0	1	1.1	0.07853	9.2	0.4	0.02627	2.8		2.0	0.13922	17.0	
Sulfate	96.1	2	5.2	0.10744	12.6	15.1	0.31439	33.5		1.8	0.03664	4.5	
Total Anions (meq/L)				0.9			0.9				0.8		
Total Ions (meq/L)				1.6			1.8				1.5		
Cation/Anion Ratio				0.91			0.89				0.88		
Percent Difference				-4.9			-6.1				-6.7		
TRILINEAR DIAGRAM DATA													
sum (Ca, Mg, Na+K)			0.77			0.83				0.72			1.34
Calcium				56.0				51.0				51.7	41.0
Magnesium				22.8				19.8				19.9	38.3
Sodium + Potassium				21.2				29.2				28.5	20.8
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			0.78			0.91				0.68			1.61
Sulfate				13.8				34.5				5.4	15.8
Chloride				12.7				13.3				15.0	3.5
Bicarbonate + Carbonate				73.4				52.2				79.6	80.7

**Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells**

Data Collected from April 1, 2010 to June 30, 2010

East Perched Zone															
Site ID		MW-30A 4/1/2010				MW-47 4/14/2010				MW-62 4/6/2010				MW-EB6 4/9/2010	
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	
Calcium	40.1	2	32.7	1.63174	43.4	105.0	5.23952	51.3	19.4	0.96806	49.8	12.5	0.62375	30.0	
Magnesium	24.3	2	17.3	1.42358	37.9	49.5	4.07324	39.9	5.0	0.40732	21.0	7.2	0.59247	28.5	
Potassium	39.1	1	1.8	0.04578	1.2	4.5	0.11433	1.1	1.0	0.02609	1.3	1.4	0.0353	1.7	
Sodium	23.0	1	15.1	0.65681	17.5	16.7	0.72641	7.1	12.4	0.53937	27.8	12.1	0.52632	25.3	
Iron	55.8	2	0.0	0.00036	0.0	0.0	0.0014	0.0	0.0	0.00036	0.0	5.6	0.20055	9.6	
Manganese	54.9	2	0.0	3.6E-05	0.0	1.3	0.04733	0.5	0.0	3.6E-05	0.0	0.7	0.02465	1.2	
Ammonia-N	14.0	1	0.0	0.00071	0.0	0.1	0.00465	0.0	0.0	0.00071	0.0	1.1	0.07925	3.8	
Total Cations (meq/L)			3.8			10.2			1.9			2.1			
Anions															
Alkalinity, Total			178			613			57.7			92.3			
Carbonate	60.0	2	0.02881	0.00096	0.0	3.7E-08	1.2E-09	0.0	3.5E-09	1.2E-10	0.0	5.6E-09	1.9E-10	0.0	
Bicarbonate	61.0	1	217.10	3.5585	89.4	747.86	12.2582	96.8	70.39	1.15383	54.0	112.61	1.84572	97.9	
Chloride	35.5	1	4.4	0.12298	3.1	8.1	0.2296	1.8	14.4	0.40617	19.0	1.3	0.03639	1.9	
Nitrate-N	14.0	1	0.9	0.0664	1.7	0.0	0.00071	0.0	3.2	0.2306	10.8	0.0	0.00071	0.0	
Sulfate	96.1	2	11.2	0.23319	5.9	8.2	0.16969	1.3	16.7	0.34771	16.3	0.1	0.00291	0.2	
Total Anions (meq/L)			4.0			12.7			2.1			1.9			
Total Ions (meq/L)			7.7			22.9			4.1			4.0			
Cation/Anion Ratio			0.94			0.81			0.91			1.10			
Percent Difference			-2.9			-10.7			-4.8			5.0			
TRILINEAR DIAGRAM DATA															
sum (Ca, Mg, Na+K)			3.76			10.15			1.94			1.78			
Calcium			43.4			51.6			49.88			35.08			
Magnesium			37.9			40.1			20.99			33.33			
Sodium + Potassium			18.7			8.3			29.13			31.55			
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			3.92			12.66			1.91			1.89			
Sulfate			6.0			1.3			18.2			0.2			
Chloride			3.1			1.8			21.3			1.9			
Bicarbonate + Carbonate			90.9			96.8			60.5			97.9			

Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells

Data Collected from July 1, 2010 to September 30, 2010

North and West Perched Wells														
Site ID	MW-27A 7/12/2010				MW-28 7/8/2010				MW-29 7/26/2010				MW-55 7/29/2010	
Date														
Cations														
Calcium	40.1	2	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)	mg/L	meq/L	% (meq)
Magnesium	24.3	2	6.4	0.52335	23.7	2.3	0.19255	20.3	2.0	0.16211	22.9	6.1	0.5036	36.2
Potassium	39.1	1	3.9	0.10026	4.5	1.0	0.02609	2.7	0.5	0.01348	1.9	1.6	0.04195	3.0
Sodium	23.0	1	7.8	0.33798	15.3	6.1	0.26403	27.8	4.6	0.20052	28.3	6.0	0.26012	18.7
Iron	55.8	2	0.0	0.00036	0.0	0.0	0.00036	0.0	0.0	0.00036	0.1	0.2	0.00845	0.6
Manganese	54.9	2	0.0	0.00146	0.1	0.0	0.00012	0.0	0.0	3.6E-05	0.0	0.2	0.00582	0.4
Ammonia-N	14.0	1	0.1	0.00878	0.4	0.0	0.00071	0.1	0.0	0.00071	0.1	0.1	0.00371	0.3
Total Cations (meq/L)	2.2				1.0				0.7				1.4	
Anions														
Alkalinity, Total	80				24.8				25.1				62	
Carbonate	60.0	2	0.22288	0.00743	0.3	0.00068	2.3E-05	0.0	0.00169	5.6E-05	0.0	0.31469	0.01049	0.7
Bicarbonate	61.0	1	96.66	1.58433	71.7	30.25	0.4959	52.4	30.62	0.50187	65.9	75.00	1.22932	79.9
Chloride	35.5	1	9.6	0.27163	12.3	4.6	0.1289	13.6	3.3	0.09223	12.1	2.0	0.05585	3.6
Nitrate-N	14.0	1	0.0	0.00304	0.1	0.2	0.01699	1.8	1.8	0.12779	16.8	0.0	0.00071	0.0
Sulfate	96.1	2	16.5	0.34354	15.5	14.6	0.30398	32.1	1.9	0.03956	5.2	11.6	0.24152	15.7
Total Anions (meq/L)	2.2				0.9				0.8				1.5	
Total Ions (meq/L)	4.4				1.9				1.5				2.9	
Cation/Anion Ratio	1.00				1.00				0.93				0.91	
Percent Difference	-0.1				0.2				-3.6				-5.0	
TRILINEAR DIAGRAM DATA														
sum (Ca, Mg, Na+K)	2.19				0.95				0.71				1.37	
Calcium	56.2				49.2				46.9				41.4	
Magnesium	23.9				20.3				22.9				36.6	
Sodium + Potassium	20.0				30.6				30.2				22.0	
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	2.21				0.93				0.63				1.54	
Sulfate	15.6				32.7				6.2				15.7	
Chloride	12.3				13.9				14.6				3.6	
Bicarbonate + Carbonate	72.1				53.4				79.2				80.7	

Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells

Data Collected from July 1, 2010 to September 30, 2010

Site ID			East Perched Zone												SSWA							
Date			MW-30A 7/28/2010				MW-47 7/27/2010				MW-62 7/7/2010				MW-EB6 7/8/2010				MW-101 7/30/2010			
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)		
Calcium	40.1	2	28.4	1.41717	39.0	116.0	5.78842	51.0	26.7	1.33234	44.9	13.6	0.67864	31.2	65.5	3.26846	44.2					
Magnesium	24.3	2	17.2	1.41535	38.9	55.5	4.56696	40.3	9.6	0.78749	26.5	6.3	0.51923	23.8	39.3	3.2339	43.8					
Potassium	39.1	1	1.8	0.04629	1.3	4.9	0.12456	1.1	1.4	0.03504	1.2	1.7	0.04322	2.0	2.9	0.07468	1.0					
Sodium	23.0	1	17.4	0.75686	20.8	18.5	0.80471	7.1	18.7	0.81341	27.4	15.1	0.65681	30.2	17.0	0.73946	10.0					
Iron	55.8	2	0.0	0.00036	0.0	0.1	0.00211	0.0	0.0	0.00036	0.0	3.8	0.13573	6.2	0.5	0.01683	0.2					
Manganese	54.9	2	0.0	3.6E-05	0.0	1.4	0.04987	0.4	0.0	3.6E-05	0.0	0.8	0.02941	1.4	1.6	0.05643	0.8					
Ammonia-N	14.0	1	0.0	0.00071	0.0	0.1	0.00709	0.1	0.0	0.00071	0.0	1.6	0.11423	5.2	0.0	0.00143	0.0					
Total Cations (meq/L)			3.6				11.3				3.0				2.2				7.4			
Anions			184				617				104				97.8				427			
Alkalinity, Total			0.01563				0.54805				0.03854				0.01121				0.1657			
Carbonate	60.0	2	224.45	3.67892	91.2	751.63	12.3199	97.1	126.80	2.0784	68.7	119.29	1.95533	98.4	520.60	8.53319	96.8					
Bicarbonate	61.0	1	3.3	0.09223	2.3	7.7	0.21578	1.7	5.4	0.1526	5.0	0.8	0.02296	1.2	5.7	0.1619	1.8					
Chloride	35.5	1	0.7	0.05012	1.2	0.0	0.00071	0.0	3.8	0.26772	8.9	0.0	0.00193	0.1	0.0	0.00071	0.0					
Nitrate-N	14.0	1	10.2	0.21237	5.3	6.7	0.13888	1.1	25.2	0.52469	17.3	0.3	0.00618	0.3	5.7	0.11826	1.3					
Sulfate	96.1	2																				
Total Anions (meq/L)			4.0				12.7				3.0				2.0				8.8			
Total Ions (meq/L)			7.7				24.0				6.0				4.2				16.2			
Cation/Anion Ratio			0.90				0.89				0.98				1.10				0.84			
Percent Difference			-5.2				-5.6				-0.9				4.6				-9			
TRILINEAR DIAGRAM DATA																						
sum (Ca, Mg, Na+K)			3.64				11.28				2.97				1.90				7.32			
Calcium			39.0				51.3				44.89				35.76				44.67			
Magnesium			38.9				40.5				26.53				27.36				44.20			
Sodium + Potassium			22.1				8.2				28.58				36.88				11.13			
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			3.98				12.69				2.76				1.98				8.82			
Sulfate			5.3				1.1				19.0				0.3				1.3			
Chloride			2.3				1.7				5.5				1.2				1.8			
Bicarbonate + Carbonate			92.4				97.2				75.4				98.5				96.8			

Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells

Data Collected from October 1, 2010 to December 31, 2010

Site ID	North and West Perched Wells											
	MW-27A 10/15/2010				MW-28 10/15/2010				MW-29 10/15/2010			
Date	mg/L	meq/L	%(meq)		mg/L	meq/L	%(meq)		mg/L	meq/L	%(meq)	
Cations												
Calcium	21.9	1.09281	53.4	2	9.7	0.48453	48.7		7.8	0.38822	50.0	
Magnesium	6.4	0.52746	25.8	2	2.5	0.20736	20.8		2.1	0.17198	22.1	
Potassium	3.7	0.09361	4.6	1	1.0	0.02481	2.5		0.6	0.01496	1.9	
Sodium	7.2	0.31449	15.4	1	6.4	0.27795	27.9		4.6	0.20052	25.8	
Iron	0.0	0.00036	0.0	2	0.0	0.00036	0.0		0.0	0.00036	0.0	
Manganese	0.1	0.00194	0.1	2	0.0	9.9E-05	0.0		0.0	3.6E-05	0.0	
Ammonia-N	0.2	0.01721	0.8	1	0.0	0.00071	0.1		0.0	0.00071	0.1	
Total Cations (meq/L)		2.0				1.0				0.8		
Anions												
Alkalinity, Total	79				29.1				28.6			
Carbonate	0.28932	0.00964	0.5	2	0.00103	3.4E-05	0.0		0.00442	0.00015	0.0	
Bicarbonate	95.18	1.56012	75.7	1	35.50	0.58188	55.1		34.88	0.57177	67.6	
Chloride	7.1	0.20111	9.8	1	3.5	0.09872	9.3		3.2	0.08885	10.5	
Nitrate-N	0.0	0.00071	0.0	1	0.1	0.00504	0.5		2.0	0.14136	16.7	
Sulfate	13.9	0.28941	14.0	2	17.8	0.37061	35.1		2.1	0.04331	5.1	
Total Anions (meq/L)		2.1				1.1				0.8		
Total Ions (meq/L)		4.1				2.1				1.6		
Cation/Anion Ratio		0.99				0.94				0.92		
Percent Difference		-0.3				-2.9				-4.2		
TRILINEAR DIAGRAM DATA												
sum (Ca, Mg, Na+K)	2.03				0.99				0.78			
Calcium			53.9				48.7				50.0	
Magnesium			26.0				20.8				22.2	
Sodium + Potassium			20.1				30.4				27.8	
sum (SO ₄ , Cl, HCO ₃ +CO ₃)	2.06				1.05				0.70			
Sulfate			14.0				35.3				6.2	
Chloride			9.8				9.4				12.6	
Bicarbonate + Carbonate			76.2				55.4				81.2	

**Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells**

Data Collected from October 1, 2010 to December 31, 2010

Site ID Date	East Perched Zone												SSWA					
	MW-30A 10/14/2010					MW-47 10/14/2010					MW-EB6 12/3/2010					MW-101 12/7/2010		
	Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
Calcium	40.1	2	30.9	1.54192	39.3	124.0	6.18762	50.0	11.6	0.57884	27.8	62.8	3.13373	41.3	62.8	3.13373	41.3	
Magnesium	24.3	2	20.0	1.64575	41.9	62.8	5.16766	41.8	6.8	0.55873	26.8	43.6	3.58774	47.2	43.6	3.58774	47.2	
Potassium	39.1	1	1.8	0.04655	1.2	5.3	0.13658	1.1	1.2	0.02941	1.4	2.8	0.07085	0.9	17.1	0.74381	9.8	
Sodium	23.0	1	15.9	0.69161	17.6	18.5	0.80471	6.5	12.0	0.52197	25.1	17.1	0.74381	9.8	17.1	0.74381	9.8	
Iron	55.8	2	0.0	0.00036	0.0	0.2	0.00784	0.1	9.1	0.32696	15.7	0.3	0.00974	0.1	0.3	0.00974	0.1	
Manganese	54.9	2	0.0	3.6E-05	0.0	1.8	0.06371	0.5	0.6	0.0233	1.1	1.3	0.04842	0.1	1.3	0.04842	0.1	
Ammonia-N	14.0	1	0.0	0.00071	0.0	0.1	0.00643	0.1	0.6	0.04362	2.1	0.0	0.00136	0.0	0.0	0.00136	0.0	
Total Cations (meq/L)			3.9			12.4			2.1			7.6						
Anions																		
Alkalinity, Total			185			620			94.6			422						
Carbonate	60.0	2	0.03359	0.00112	0.0	0.33976	0.01133	0.1	0.00881	0.00029	0.0	0.23664	0.00789	0.1	0.23664	0.00789	0.1	
Bicarbonate	61.0	1	225.63	3.69832	91.2	755.71	12.3868	97.2	115.39	1.89142	98.5	514.36	8.43084	97.7	514.36	8.43084	97.7	
Chloride	35.5	1	3.5	0.09731	2.4	7.3	0.20675	1.6	0.9	0.02508	1.3	4.8	0.13567	1.6	4.8	0.13567	1.6	
Nitrate-N	14.0	1	0.6	0.04191	1.0	0.0	0.00071	0.0	0.0	0.001	0.1	0.0	0.00071	0.0	0.0	0.00071	0.0	
Sulfate	96.1	2	10.5	0.21862	5.4	6.4	0.13409	1.1	0.1	0.00208	0.1	5.7	0.11785	1.4	5.7	0.11785	1.4	
Total Anions (meq/L)			4.1			12.7			1.9			8.7						
Total Ions (meq/L)			8.0			25.1			4.0			16.3						
Cation/Anion Ratio			0.97			0.97			1.08			0.87						
Percent Difference			-1.6			-1.5			4.1			-7						
TRILINEAR DIAGRAM DATA																		
sum (Ca, Mg, Na+K)			3.93			12.30			1.69			7.54			41.58			
Calcium			39.3			50.3			34.27			7.54			41.58			
Magnesium			41.9			42.0			33.08						47.61			
Sodium + Potassium			18.8			7.7			32.65						10.81			
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			4.02			12.74			1.92			8.69			1.4			
Sulfate			5.4			1.1			0.1						1.4			
Chloride			2.4			1.6			1.3						1.6			
Bicarbonate + Carbonate			92.1			97.3			98.6						97.7			