

Attachment D

2013 Groundwater Data Evaluation

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

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from January 1, 2013 to March 31, 2013

Site ID			Upgradient South																	
			MW-94 1/14/13			MW-76 1/25/13			MW-83 1/18/13			MW-82 1/23/13			MW-60 1/7/13			MW-57 1/17/13		
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	25.3	1.26248	48.2	19.7	0.98303	47.4	29.0	1.44711	50.5	20.2	1.00798	43.2	15.2	0.75848	45.3	16.7	0.83333	36.1
Magnesium	24.3	2	12.1	0.99568	38.0	8.9	0.73154	35.3	12.6	1.03682	36.2	12.1	0.99568	42.6	7.8	0.64431	38.5	10.0	0.82041	35.6
Potassium	39.1	1	2.0	0.05064	1.9	1.4	0.0353	1.7	2.2	0.0555	1.9	1.6	0.04067	1.7	1.0	0.0266	1.6	0.9	0.02356	1.0
Sodium	23.0	1	7.2	0.31188	11.9	7.4	0.32319	15.6	7.5	0.3271	11.4	6.7	0.28926	12.4	5.6	0.24359	14.5	7.1	0.30753	13.3
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	0.01	0.00043	0.0	8.67	0.31049	13.5
Manganese	54.9	2	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	0.00	3.6E-05	0.0	0.25	0.00903	0.4
Ammonia-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.03	0.00218	0.1
Total Cations (meq/L)			2.6			2.1			2.9			2.3			1.7			2.3		
Anions																				
Alkalinity, Total			100			62			109			97			69			77		
Carbonate	60.0	2	0.0397	0.00132	0.0	0.0069	0.00023	0.0	0.0532	0.00177	0.1	0.0286	0.00095	0.0	0.0359	0.0012	0.1	0.03	0.001	0.0
Bicarbonate	61.0	1	121.80	1.99638	72.2	75.02	1.22959	58.0	132.87	2.1779	72.9	118.65	1.94475	77.3	83.50	1.3686	82.3	94.25	1.54477	74.1
Chloride	35.5	1	19.0	0.53592	19.4	14.2	0.40053	18.9	19.7	0.55567	18.6	6.3	0.17826	7.1	2.7	0.07559	4.5	5.8	0.16444	7.9
Nitrate-N	14.0	1	1.44	0.10281	3.7	0.75	0.05369	2.5	0.36	0.02584	0.9	0.66	0.04705	1.9	1.15	0.0821	4.9	0.05	0.0038	0.2
Sulfate	96.1	2	6.1	0.12763	4.6	21.0	0.43724	20.6	10.8	0.22487	7.5	16.5	0.34354	13.7	6.5	0.13575	8.2	17.8	0.37061	17.8
Total Anions (meq/L)			2.8			2.1			3.0			2.5			1.7			2.1		
Total Ions (meq/L)			5.4			4.2			5.9			4.8			3.3			4.4		
Cation/Anion Ratio			0.95			0.98			0.96			0.93			1.01			1.11		
Percent Difference			-2.6			-1.1			-2.0			-3.7			0.3			5.1		
Trilinear Diagram Data																				
sum (Ca, Mg, Na+K)			2.62			2.07			2.87			2.33			1.67			1.98		
Calcium						48.17			47.42			50.48			43.19			45.34		
Magnesium						37.99			35.29			36.17			42.67			38.51		
Sodium + Potassium						13.83			17.29			13.35			14.14			16.15		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			2.66			2.07			2.96			2.47			1.58			2.08		
Sulfate						4.796			21.147			7.596			13.923			8.586		
Chloride						20.138			19.372			18.771			7.224			4.781		
Bicarbonate + Carbonate						75.066			59.481			73.633			78.853			86.633		

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from January 1, 2013 to March 31, 2013

Site ID			Upgradient South														
			MW-56 1/24/13			MW-65 1/18/13			MW-24 1/3/13			MW-59 1/25/13			MW-58A 1/18/13		
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	15.3	0.76347	51.6	12.2	0.60878	36.5	13.6	0.67864	36.3	14.0	0.6986	39.3	16.5	0.82335	44.1
Magnesium	24.3	2	5.8	0.47891	32.4	7.6	0.62456	37.4	9.5	0.77926	41.7	8.1	0.66406	37.3	8.7	0.71837	38.5
Potassium	39.1	1	1.0	0.0246	1.7	0.9	0.02264	1.4	0.9	0.02302	1.2	1.2	0.03044	1.7	1.0	0.02458	1.3
Sodium	23.0	1	4.8	0.20966	14.2	5.7	0.24576	14.7	6.1	0.26577	14.2	5.1	0.22271	12.5	5.7	0.24576	13.2
Iron	55.8	2	0.01	0.00036	0.0	4.41	0.15793	9.5	3.28	0.11746	6.3	4.41	0.15793	8.9	1.01	0.03617	1.9
Manganese	54.9	2	0.06	0.00233	0.2	0.20	0.00717	0.4	0.12	0.00433	0.2	0.10	0.00352	0.2	0.34	0.01227	0.7
Ammonia-N	14.0	1	0.01	0.00071	0.0	0.02	0.00121	0.1	0.03	0.00189	0.1	0.01	0.00071	0.0	0.07	0.00479	0.3
Total Cations (meq/L)			1.5			1.7			1.9			1.8			1.9		
Anions																	
Alkalinity, Total			52			53			64			61			73		
Carbonate	60.0	2	0.031	0.00103	0.1	0.0399	0.00133	0.1	0.0459	0.00153	0.1	0.045	0.0015	0.1	0.1329	0.00443	0.2
Bicarbonate	61.0	1	62.89	1.03081	66.6	64.33	1.05451	68.8	77.38	1.26828	73.7	74.21	1.21632	72.0	89.28	1.46335	76.8
Chloride	35.5	1	4.0	0.11142	7.2	4.1	0.11593	7.6	3.8	0.10577	6.1	4.1	0.11508	6.8	4.1	0.11508	6.0
Nitrate-N	14.0	1	0.31	0.02242	1.4	0.01	0.00071	0.0	0.01	0.00071	0.0	0.03	0.00207	0.1	0.01	0.00071	0.0
Sulfate	96.1	2	18.3	0.38102	24.6	17.3	0.3602	23.5	16.6	0.34563	20.1	17.0	0.35395	21.0	15.4	0.32064	16.8
Total Anions (meq/L)			1.5			1.5			1.7			1.7			1.9		
Total Ions (meq/L)			3.0			3.2			3.6			3.5			3.8		
Cation/Anion Ratio			0.96			1.09			1.09			1.05			0.98		
Percent Difference			-2.2			4.2			4.1			2.6			-1.0		
Trilinear Diagram Data																	
sum (Ca, Mg, Na+K)			1.48			1.50			1.75			1.62			1.81		
Calcium			51.70			40.54			38.85			43.24			45.44		
Magnesium			32.43			41.59			44.61			41.10			39.64		
Sodium + Potassium			15.86			17.87			16.53			15.67			14.92		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.52			1.53			1.72			1.69			1.90		
Sulfate			24.997			23.512			20.080			20.983			16.845		
Chloride			7.309			7.567			6.145			6.822			6.046		
Bicarbonate + Carbonate			67.694			68.920			73.774			72.195			77.109		

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from January 1, 2013 to March 31, 2013

Site ID			Upgradient Northwest									Upgradient Northeast					
			MW-73 1/22/13			MW-21 1/8/13			MW-84 1/17/13			MW-81 1/11/13			MW-99 1/11/13		
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	10.5	0.52395	54.7	10.1	0.50399	36.4	10.7	0.53393	34.9	11.1	0.55389	41.6	9.2	0.46008	35.1
Magnesium	24.3	2	3.2	0.26579	27.7	6.3	0.51923	37.5	8.6	0.70438	46.1	6.1	0.50442	37.9	4.6	0.37688	28.8
Potassium	39.1	1	0.7	0.01852	1.9	1.0	0.0266	1.9	0.9	0.02374	1.6	0.7	0.01808	1.4	0.8	0.02021	1.5
Sodium	23.0	1	3.4	0.1492	15.6	6.1	0.26534	19.1	6.1	0.2649	17.3	5.8	0.25316	19.0	10.2	0.44368	33.9
Iron	55.8	2	0.01	0.00036	0.0	1.87	0.06697	4.8	0.01	0.00036	0.0	0.01	0.00036	0.0	0.03	0.00093	0.1
Manganese	54.9	2	0.00	3.6E-05	0.0	0.07	0.00272	0.2	0.00	9.8E-05	0.0	0.00	3.6E-05	0.0	0.08	0.00297	0.2
Ammonia-N	14.0	1	0.01	0.00071	0.1	0.01	0.00071	0.1	0.01	0.00071	0.0	0.01	0.00071	0.1	0.07	0.00509	0.4
Total Cations (meq/L)				1.0			1.4			1.5			1.3			1.3	
Anions																	
Alkalinity, Total			34			56			59			48			53		
Carbonate	60.0	2	0.0032	0.00011	0.0	0.1391	0.00464	0.4	0.0437	0.00146	0.1	0.0704	0.00235	0.2	0.2892	0.00964	0.7
Bicarbonate	61.0	1	41.35	0.67779	68.2	67.67	1.1092	85.3	72.14	1.18236	73.1	58.17	0.95351	72.0	64.32	1.0542	80.2
Chloride	35.5	1	2.1	0.05923	6.0	2.8	0.0787	6.1	4.2	0.11903	7.4	3.2	0.09082	6.9	3.2	0.0897	6.8
Nitrate-N	14.0	1	1.16	0.08282	8.3	0.01	0.00071	0.1	0.59	0.04205	2.6	1.62	0.11566	8.7	0.02	0.00164	0.1
Sulfate	96.1	2	8.4	0.17448	17.5	5.1	0.10639	8.2	13.1	0.27275	16.9	7.8	0.16157	12.2	7.7	0.1597	12.1
Total Anions (meq/L)				1.0			1.3			1.6			1.3			1.3	
Total Ions (meq/L)				2.0			2.7			3.1			2.7			2.6	
Cation/Anion Ratio				0.96			1.07			0.94			1.01			1.00	
Percent Difference				-1.8			3.2			-2.8			0.3			-0.2	
Trilinear Diagram Data																	
sum (Ca, Mg, Na+K)				0.96			1.32			1.53			1.33			1.30	
Calcium					54.72			38.32			34.97			41.66			35.37
Magnesium					27.76			39.48			46.13			37.94			28.97
Sodium + Potassium					17.52			22.20			18.90			20.40			35.66
					100.0			100.0			100.0						
sum (SO ₄ , Cl, HCO ₃ +CO ₃)				0.91			1.30			1.58			1.21			1.31	
Sulfate					19.140			8.191			17.311			13.372			12.161
Chloride					6.498			6.059			7.555			7.517			6.830
Bicarbonate + Carbonate					74.363			85.750			75.134			79.111			81.009

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from January 1, 2013 to March 31, 2013

Site ID			Cross Gradient						Interior											
			MW-93 1/16/13			MW-95 1/17/13			MW-70 1/25/13			MW-78 1/25/13			MW-77 1/25/13			MW-100 1/14/13		
	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)
Cations																				
Calcium	40.1	2	33.3	1.66168	45.7	19.0	0.9481	45.2	19.7	0.98303	46.7	15.6	0.77844	46.6	22.3	1.11277	46.2	26.2	1.30739	41.6
Magnesium	24.3	2	18.2	1.49763	41.2	10.3	0.84756	40.4	10.1	0.8311	39.5	7.2	0.59576	35.7	11.6	0.95454	39.6	16.1	1.32483	42.2
Potassium	39.1	1	1.5	0.0376	1.0	1.1	0.02839	1.4	1.5	0.03888	1.8	2.0	0.05115	3.1	1.5	0.03862	1.6	1.8	0.04655	1.5
Sodium	23.0	1	9.7	0.42106	11.6	6.1	0.26621	12.7	5.8	0.25229	12.0	5.6	0.24402	14.6	7.0	0.30318	12.6	9.4	0.40714	13.0
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	0.01	0.00036	0.0	1.29	0.0462	1.5
Manganese	54.9	2	0.25	0.00906	0.2	0.13	0.00484	0.2	0.00	3.6E-05	0.0	0.00	3.6E-05	0.0	0.00	7.4E-05	0.0	0.23	0.00823	0.3
Ammonia-N	14.0	1	0.07	0.00498	0.1	0.03	0.00178	0.1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0
Total Cations (meq/L)				3.6			2.1			2.1			1.7			2.4			3.1	
Anions																				
Alkalinity, Total			117			86			82			67			105			134		
Carbonate	60.0	2	0.1113	0.00371	0.1	0.1351	0.0045	0.2	0.0987	0.00329	0.2	0.0196	0.00065	0.0	0.0562	0.00187	0.1	0.057	0.0019	0.1
Bicarbonate	61.0	1	142.51	2.33594	60.0	104.16	1.70724	76.5	100.33	1.64446	78.2	81.33	1.33314	76.8	127.99	2.09781	84.6	163.36	2.6777	84.5
Chloride	35.5	1	3.0	0.08349	2.1	5.9	0.16585	7.4	3.9	0.11029	5.2	6.6	0.18503	10.7	4.8	0.13511	5.5	2.7	0.077	2.4
Nitrate-N	14.0	1	0.02	0.00121	0.0	0.01	0.00071	0.0	0.03	0.00207	0.1	1.00	0.07139	4.1	0.88	0.06247	2.5	0.01	0.00071	0.0
Sulfate	96.1	2	70.6	1.46995	37.7	17.0	0.35395	15.9	16.5	0.34354	16.3	7.0	0.14533	8.4	8.7	0.18177	7.3	19.8	0.41225	13.0
Total Anions (meq/L)				3.9			2.2			2.1			1.7			2.5			3.2	
Total Ions (meq/L)				7.5			4.3			4.2			3.4			4.9			6.3	
Cation/Anion Ratio				0.93			0.94			1.00			0.96			0.97			0.99	
Percent Difference				-3.5			-3.1			0.1			-1.9			-1.4			-0.5	
Trilinear Diagram Data																				
sum (Ca, Mg, Na+K)				3.62			2.09			2.11			1.67			2.41			3.09	
Calcium					45.93			45.36			46.69			46.63			46.19			42.37
Magnesium					41.39			40.55			39.48			35.69			39.62			42.93
Sodium + Potassium					12.68			14.09			13.83			17.68			14.19			14.70
sum (SO ₄ , Cl, HCO ₃ +CO ₃)				3.89			2.23			2.10			1.66			2.42			3.17	
Sulfate					37.758			15.861			16.347			8.733			7.522			13.010
Chloride					2.145			7.432			5.248			11.119			5.591			2.430
Bicarbonate + Carbonate					60.097			76.706			78.405			80.148			86.887			84.560

Data Collected from January 1, 2013 to March 31, 2013

Site ID			Vertical to Facilites												Downgradient Northwest								
			MW-64 1/16/13			MW-68 1/15/13			MW-67 1/3/13			MW-66 1/10/13			MW-72 1/28/13			MW-69 1/8/13					
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	17.2	0.85828	38.0	26.0	1.29741	43.0	31.1	1.5519	44.1	22.7	1.13273	36.8	29.4	1.46707	44.6	29.3	1.46208	45.8			
Magnesium	24.3	2	12.9	1.06151	47.0	15.3	1.259	41.8	18.5	1.52232	43.2	18.4	1.51409	49.2	16.8	1.38243	42.0	15.1	1.24254	38.9			
Potassium	39.1	1	1.4	0.03555	1.6	1.5	0.03939	1.3	1.5	0.03811	1.1	1.2	0.03171	1.0	1.9	0.04757	1.4	1.6	0.04195	1.3			
Sodium	23.0	1	6.8	0.29578	13.1	8.6	0.37364	12.4	9.2	0.40018	11.4	9.1	0.3967	12.9	6.8	0.29665	9.0	9.0	0.39191	12.3			
Iron	55.8	2	0.09	0.00339	0.2	0.99	0.03553	1.2	0.13	0.00473	0.1	0.01	0.00036	0.0	2.30	0.08237	2.5	1.31	0.04691	1.5			
Manganese	54.9	2	0.06	0.00222	0.1	0.23	0.00826	0.3	0.08	0.00289	0.1	0.00	3.6E-05	0.0	0.30	0.01099	0.3	0.20	0.00732	0.2			
Ammonia-N	14.0	1	0.05	0.00353	0.2	0.02	0.00107	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00079	0.0	0.01	0.00071	0.0			
Total Cations (meq/L)			2.3			99.8			3.0			3.5			3.1			3.3			3.2		
Anions																							
Alkalinity, Total			91			133			123			120			115			129					
Carbonate	60.0	2	0.0658	0.00219	0.1	0.1053	0.00351	0.1	0.0909	0.00303	0.1	0.0972	0.00324	0.1	0.0524	0.00175	0.1	0.3076	0.01025	0.3			
Bicarbonate	61.0	1	111.01	1.81953	78.6	162.05	2.65609	85.3	149.88	2.4566	70.4	146.20	2.3964	81.0	140.19	2.29791	70.8	156.75	2.56936	85.8			
Chloride	35.5	1	3.0	0.08377	3.6	2.8	0.07926	2.5	5.0	0.14103	4.0	7.3	0.20478	6.9	6.7	0.18955	5.8	4.3	0.12016	4.0			
Nitrate-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.51	0.03605	1.0	0.73	0.05197	1.8	0.01	0.00093	0.0	0.01	0.00071	0.0			
Sulfate	96.1	2	19.7	0.41017	17.7	17.9	0.37269	12.0	40.9	0.85157	24.4	14.5	0.3019	10.2	36.2	0.75371	23.2	14.1	0.29357	9.8			
Total Anions (meq/L)			2.3			100.0			3.1			3.0			3.2			3.0					
Total Ions (meq/L)			4.6			6.1			7.0			6.0			6.5			6.2					
Cation/Anion Ratio			0.98			0.97			1.01			1.04			1.01			1.07					
Percent Difference			-1.2			-1.6			0.5			2.0			0.7			3.2					
Trilinear Diagram Data																							
sum (Ca, Mg, Na+K)			2.25			2.97			3.51			3.08			3.19			3.14					
Calcium			38.13			43.69			44.18			36.83			45.94			46.59					
Magnesium			47.15			42.40			43.34			49.23			43.29			39.59					
Sodium + Potassium			14.72			13.91			12.48			13.93			10.78			13.82					
			100.0																				
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			2.32			3.11			3.45			2.91			3.24			2.99					
Sulfate			17.713			11.978			24.667			10.388			23.242			9.808					
Chloride			3.618			2.547			4.085			7.046			5.845			4.014					
Bicarbonate + Carbonate			78.670			85.475			71.247			82.566			70.913			86.178					
			100.0																				

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from January 1, 2013 to March 31, 2013

Site ID			Downgradient																	
			MW-74 1/11/13			MW-87 1/11/13			MW-85 1/24/13			MW-80 1/29/13			MW-75 1/11/13			MW-91 1/22/13		
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	39.7	1.98104	38.3	36.7	1.83134	40.0	22.6	1.12774	42.7	26.8	1.33733	48.2	23.7	1.18263	36.8	21.4	1.06786	38.8
Magnesium	24.3	2	31.5	2.59206	50.1	26.0	2.13948	46.7	13.9	1.1438	43.3	12.9	1.06151	38.3	18.7	1.53878	47.8	14.2	1.16848	42.5
Potassium	39.1	1	1.9	0.04885	0.9	2.0	0.05039	1.1	1.4	0.03606	1.4	1.5	0.03862	1.4	1.6	0.04143	1.3	1.7	0.0422	1.5
Sodium	23.0	1	12.7	0.55242	10.7	9.8	0.42541	9.3	7.7	0.3345	12.7	6.5	0.2823	10.2	8.8	0.38452	12.0	7.5	0.32406	11.8
Iron	55.8	2	0.01	0.00036	0.0	3.31	0.11854	2.6	0.01	0.00036	0.0	1.26	0.04512	1.6	1.77	0.06339	2.0	3.77	0.13501	4.9
Manganese	54.9	2	0.03	0.00108	0.0	0.37	0.01329	0.3	0.00	3.6E-05	0.0	0.22	0.00801	0.3	0.13	0.00488	0.2	0.31	0.0111	0.4
Ammonia-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.03	0.00243	0.1
Total Cations (meq/L)			5.2			4.6			2.6			2.8			3.2			2.8		
Anions																				
Alkalinity, Total			198			89			95			89			98			86		
Carbonate	60.0	2	0.2114	0.00705	0.1	0.0396	0.00132	0.0	0.0485	0.00162	0.1	0.0446	0.00149	0.1	0.081	0.0027	0.1	0.0636	0.00212	0.1
Bicarbonate	61.0	1	241.13	3.95236	77.7	108.38	1.77641	38.0	115.56	1.8941	68.1	108.86	1.78424	63.0	119.03	1.95101	62.2	104.79	1.71762	62.3
Chloride	35.5	1	23.1	0.65157	12.8	6.0	0.16924	3.6	7.4	0.20816	7.5	5.8	0.1636	5.8	8.6	0.24145	7.7	7.6	0.21465	7.8
Nitrate-N	14.0	1	0.44	0.0312	0.6	0.01	0.00071	0.0	0.12	0.00871	0.3	0.03	0.002	0.1	0.01	0.00071	0.0	0.03	0.00214	0.1
Sulfate	96.1	2	21.3	0.44348	8.7	131.0	2.72753	58.3	32.2	0.67043	24.1	42.4	0.8828	31.1	45.3	0.94318	30.0	39.4	0.82034	29.8
Total Anions (meq/L)			5.1			4.7			2.8			2.8			3.1			2.8		
Total Ions (meq/L)			10.3			9.3			5.4			5.6			6.4			5.5		
Cation/Anion Ratio			1.02			0.98			0.95			0.98			1.02			1.00		
Percent Difference			0.9			-1.0			-2.6			-1.1			1.2			-0.1		
Trilinear Diagram Data																				
sum (Ca, Mg, Na+K)			5.17			4.45			2.64			2.72			3.15			2.60		
Calcium					38.29			41.19			42.68			49.17			37.58			41.03
Magnesium					50.09			48.11			43.29			39.03			48.89			44.90
Sodium + Potassium					11.62			10.70			14.03			11.80			13.53			14.07
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			5.05			4.67			2.77			2.83			3.14			2.75		
Sulfate					8.774			58.349			24.166			31.171			30.054			29.779
Chloride					12.891			3.620			7.503			5.776			7.693			7.792
Bicarbonate + Carbonate					78.335			38.030			68.331			63.053			62.253			62.429

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from January 1, 2013 to March 31, 2013

Site ID			Downgradient of North End Facilities														
			MW-86 1/24/13			MW-88 1/28/13			MW-43 1/15/13			MW-90 1/30/13			MW-89 1/10/13		
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	12.9	0.64371	38.4	9.6	0.47804	37.5	12.5	0.62375	35.9	18.0	0.8982	44.0	14.1	0.70359	34.4
Magnesium	24.3	2	8.7	0.71755	42.8	6.7	0.5538	43.4	9.2	0.7554	43.5	9.8	0.80477	39.4	10.6	0.87225	42.7
Potassium	39.1	1	1.2	0.02941	1.8	0.8	0.02141	1.7	1.3	0.03248	1.9	1.3	0.03274	1.6	1.4	0.03632	1.8
Sodium	23.0	1	6.1	0.26534	15.8	5.1	0.22053	17.3	6.5	0.28317	16.3	5.8	0.25055	12.3	9.0	0.39191	19.2
Iron	55.8	2	0.50	0.0178	1.1	0.01	0.00036	0.0	0.91	0.03245	1.9	1.27	0.04548	2.2	0.86	0.03066	1.5
Manganese	54.9	2	0.01	0.0004	0.0	0.00	3.6E-05	0.0	0.21	0.00779	0.4	0.27	0.00965	0.5	0.25	0.00896	0.4
Ammonia-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.1	0.02	0.00178	0.1	0.02	0.00107	0.1	0.01	0.00086	0.0
Total Cations (meq/L)			1.7			1.3			1.7			2.0			2.0		
Anions																	
Alkalinity, Total			62			52			69			68			75		
Carbonate	60.0	2	0.02305	0.00077	0.0	0.01359	0.00045	0.0	0.10398	0.00347	0.2	0.03409	0.00114	0.1	0.07606	0.00254	0.1
Bicarbonate	61.0	1	75.84	1.24304	71.5	63.17	1.03539	80.1	83.97	1.37633	77.4	83.13	1.36266	67.7	90.86	1.48924	76.8
Chloride	35.5	1	4.3	0.12016	6.9	2.6	0.07305	5.7	3.9	0.10944	6.2	3.7	0.10521	5.2	4.1	0.11424	5.9
Nitrate-N	14.0	1	0.27	0.01913	1.1	0.56	0.03962	3.1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0
Sulfate	96.1	2	17.1	0.35604	20.5	6.9	0.14429	11.2	13.8	0.28733	16.2	26.1	0.54342	27.0	16.0	0.33313	17.2
Total Anions (meq/L)			1.7			1.3			1.8			2.0			1.9		
Total Ions (meq/L)			3.4			2.6			3.5			4.1			4.0		
Cation/Anion Ratio			0.96			0.99			0.98			1.01			1.05		
Percent Difference			-1.9			-0.7			-1.2			0.7			2.6		
Trilinear Diagram Data																	
sum (Ca, Mg, Na+K)			1.66			1.27			1.69			1.99			2.00		
Calcium			38.87			37.53			36.80			45.22			35.11		
Magnesium			43.33			43.48			44.57			40.52			43.52		
Sodium + Potassium			17.80			18.99			18.62			14.26			21.37		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.72			1.25			1.78			2.01			1.94		
Sulfate			20.700			11.514			16.173			27.003			17.179		
Chloride			6.986			5.829			6.160			5.228			5.891		
Bicarbonate + Carbonate			72.314			82.657			77.666			67.769			76.930		

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from April 1, 2013 to June 30, 2013

Site ID			Upgradient South																		
			MW-94 5/14/13			MW-76 5/1/13			MW-83 4/22/13			MW-82 4/22/13			MW-60 4/23/13			MW-57 4/9/13			
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	25.3	1.26248	48.2	19.7	0.98303	47.4	29.0	1.44711	50.5	20.2	1.00798	43.2	15.2	0.75848	45.3	16.7	0.83333	36.1	
Magnesium	24.3	2	12.1	0.99568	38.0	8.9	0.73154	35.3	12.6	1.03682	36.2	12.1	0.99568	42.6	7.8	0.64431	38.5	10.0	0.82041	35.6	
Potassium	39.1	1	2.0	0.05064	1.9	1.4	0.0353	1.7	2.2	0.0555	1.9	1.6	0.04067	1.7	1.0	0.0266	1.6	0.9	0.02356	1.0	
Sodium	23.0	1	7.2	0.31188	11.9	7.4	0.32319	15.6	7.5	0.3271	11.4	6.7	0.28926	12.4	5.6	0.24359	14.5	7.1	0.30753	13.3	
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	0.01	0.00043	0.0	8.67	0.31049	13.5	
Manganese	54.9	2	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	0.00	3.6E-05	0.0	0.25	0.00903	0.4	
Ammonia-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.03	0.00218	0.1	
Total Cations (meq/L)				2.6			2.1			2.9			2.3			1.7			2.3		
Anions																					
Alkalinity, Total			100			62			109			97			69			77			
Carbonate	60.0	2	0.0397	0.00132	0.0	0.0069	0.00023	0.0	0.0532	0.00177	0.1	0.0286	0.00095	0.0	0.0359	0.0012	0.1	0.03	0.001	0.0	
Bicarbonate	61.0	1	121.80	1.99638	72.2	75.02	1.22959	58.0	132.87	2.1779	72.9	118.65	1.94475	77.3	83.50	1.3686	82.3	94.25	1.54477	74.1	
Chloride	35.5	1	19.0	0.53592	19.4	14.2	0.40053	18.9	19.7	0.55567	18.6	6.3	0.17826	7.1	2.7	0.07559	4.5	5.8	0.16444	7.9	
Nitrate-N	14.0	1	1.44	0.10281	3.7	0.75	0.05369	2.5	0.36	0.02584	0.9	0.66	0.04705	1.9	1.15	0.0821	4.9	0.05	0.0038	0.2	
Sulfate	96.1	2	6.1	0.12763	4.6	21.0	0.43724	20.6	10.8	0.22487	7.5	16.5	0.34354	13.7	6.5	0.13575	8.2	17.8	0.37061	17.8	
Total Anions (meq/L)				2.8			2.1			3.0			2.5			1.7			2.1		
Total Ions (meq/L)				5.4			4.2			5.9			4.8			3.3			4.4		
Cation/Anion Ratio				0.95			0.98			0.96			0.93			1.01			1.11		
Percent Difference				-2.6			-1.1			-2.0			-3.7			0.3			5.1		
Trilinear Diagram Data																					
sum (Ca, Mg, Na+K)				2.62			2.07			2.87			2.33			1.67			1.98		
Calcium				48.17			47.42			50.48			43.19			45.34			41.99		
Magnesium				37.99			35.29			36.17			42.67			38.51			41.33		
Sodium + Potassium				13.83			17.29			13.35			14.14			16.15			16.68		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)				2.66			2.07			2.96			2.47			1.58			2.08		
Sulfate				4.796			21.147			7.596			13.923			8.586			17.811		
Chloride				20.138			19.372			18.771			7.224			4.781			7.903		
Bicarbonate + Carbonate				75.066			59.481			73.633			78.853			86.633			74.286		

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from April 1, 2013 to June 30, 2013

Site ID			Upgradient South														
			MW-56 4/8/13			MW-65 4/23/13			MW-24 4/8/13			MW-59 4/16/13			MW-58A 4/30/13		
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	15.3	0.76347	51.6	12.2	0.60878	36.5	13.6	0.67864	36.3	14.0	0.6986	39.3	16.5	0.82335	44.1
Magnesium	24.3	2	5.8	0.47891	32.4	7.6	0.62456	37.4	9.5	0.77926	41.7	8.1	0.66406	37.3	8.7	0.71837	38.5
Potassium	39.1	1	1.0	0.0246	1.7	0.9	0.02264	1.4	0.9	0.02302	1.2	1.2	0.03044	1.7	1.0	0.02458	1.3
Sodium	23.0	1	4.8	0.20966	14.2	5.7	0.24576	14.7	6.1	0.26577	14.2	5.1	0.22271	12.5	5.7	0.24576	13.2
Iron	55.8	2	0.01	0.00036	0.0	4.41	0.15793	9.5	3.28	0.11746	6.3	4.41	0.15793	8.9	1.01	0.03617	1.9
Manganese	54.9	2	0.06	0.00233	0.2	0.20	0.00717	0.4	0.12	0.00433	0.2	0.10	0.00352	0.2	0.34	0.01227	0.7
Ammonia-N	14.0	1	0.01	0.00071	0.0	0.02	0.00121	0.1	0.03	0.00189	0.1	0.01	0.00071	0.0	0.07	0.00479	0.3
Total Cations (meq/L)			1.5			1.7			1.9			1.8			1.9		
Anions																	
Alkalinity, Total			52			53			64			61			73		
Carbonate	60.0	2	0.031	0.00103	0.1	0.0399	0.00133	0.1	0.0459	0.00153	0.1	0.045	0.0015	0.1	0.1329	0.00443	0.2
Bicarbonate	61.0	1	62.89	1.03081	66.6	64.33	1.05451	68.8	77.38	1.26828	73.7	74.21	1.21632	72.0	89.28	1.46335	76.8
Chloride	35.5	1	4.0	0.11142	7.2	4.1	0.11593	7.6	3.8	0.10577	6.1	4.1	0.11508	6.8	4.1	0.11508	6.0
Nitrate-N	14.0	1	0.31	0.02242	1.4	0.01	0.00071	0.0	0.01	0.00071	0.0	0.03	0.00207	0.1	0.01	0.00071	0.0
Sulfate	96.1	2	18.3	0.38102	24.6	17.3	0.3602	23.5	16.6	0.34563	20.1	17.0	0.35395	21.0	15.4	0.32064	16.8
Total Anions (meq/L)			1.5			1.5			1.7			1.7			1.9		
Total Ions (meq/L)			3.0			3.2			3.6			3.5			3.8		
Cation/Anion Ratio			0.96			1.09			1.09			1.05			0.98		
Percent Difference			-2.2			4.2			4.1			2.6			-1.0		
Trilinear Diagram Data																	
sum (Ca, Mg, Na+K)			1.48			1.50			1.75			1.62			1.81		
Calcium			51.70			40.54			38.85			43.24			45.44		
Magnesium			32.43			41.59			44.61			41.10			39.64		
Sodium + Potassium			15.86			17.87			16.53			15.67			14.92		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.52			1.53			1.72			1.69			1.90		
Sulfate			24.997			23.512			20.080			20.983			16.845		
Chloride			7.309			7.567			6.145			6.822			6.046		
Bicarbonate + Carbonate			67.694			68.920			73.774			72.195			77.109		

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from April 1, 2013 to June 30, 2013

Site ID			Upgradient Northwest									Upgradient Northeast					
			MW-73 4/25/13			MW-21 4/8/13			MW-84 4/30/13			MW-81 4/30/13			MW-99 4/12/13		
	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)
Cations																	
Calcium	40.1	2	10.5	0.52395	54.7	10.1	0.50399	36.4	10.7	0.53393	34.9	11.1	0.55389	41.6	9.2	0.46008	35.1
Magnesium	24.3	2	3.2	0.26579	27.7	6.3	0.51923	37.5	8.6	0.70438	46.1	6.1	0.50442	37.9	4.6	0.37688	28.8
Potassium	39.1	1	0.7	0.01852	1.9	1.0	0.0266	1.9	0.9	0.02374	1.6	0.7	0.01808	1.4	0.8	0.02021	1.5
Sodium	23.0	1	3.4	0.1492	15.6	6.1	0.26534	19.1	6.1	0.2649	17.3	5.8	0.25316	19.0	10.2	0.44368	33.9
Iron	55.8	2	0.01	0.00036	0.0	1.87	0.06697	4.8	0.01	0.00036	0.0	0.01	0.00036	0.0	0.03	0.00093	0.1
Manganese	54.9	2	0.00	3.6E-05	0.0	0.07	0.00272	0.2	0.00	9.8E-05	0.0	0.00	3.6E-05	0.0	0.08	0.00297	0.2
Ammonia-N	14.0	1	0.01	0.00071	0.1	0.01	0.00071	0.1	0.01	0.00071	0.0	0.01	0.00071	0.1	0.07	0.00509	0.4
Total Cations (meq/L)				1.0			1.4			1.5			1.3			1.3	
Anions																	
Alkalinity, Total			34			56			59			48			53		
Carbonate	60.0	2	0.0032	0.00011	0.0	0.1391	0.00464	0.4	0.0437	0.00146	0.1	0.0704	0.00235	0.2	0.2892	0.00964	0.7
Bicarbonate	61.0	1	41.35	0.67779	68.2	67.67	1.1092	85.3	72.14	1.18236	73.1	58.17	0.95351	72.0	64.32	1.0542	80.2
Chloride	35.5	1	2.1	0.05923	6.0	2.8	0.0787	6.1	4.2	0.11903	7.4	3.2	0.09082	6.9	3.2	0.0897	6.8
Nitrate-N	14.0	1	1.16	0.08282	8.3	0.01	0.00071	0.1	0.59	0.04205	2.6	1.62	0.11566	8.7	0.02	0.00164	0.1
Sulfate	96.1	2	8.4	0.17448	17.5	5.1	0.10639	8.2	13.1	0.27275	16.9	7.8	0.16157	12.2	7.7	0.1597	12.1
Total Anions (meq/L)				1.0			1.3			1.6			1.3			1.3	
Total Ions (meq/L)				2.0			2.7			3.1			2.7			2.6	
Cation/Anion Ratio				0.96			1.07			0.94			1.01			1.00	
Percent Difference				-1.8			3.2			-2.8			0.3			-0.2	
Trilinear Diagram Data																	
sum (Ca, Mg, Na+K)				0.96			1.32			1.53			1.33			1.30	
Calcium					54.72			38.32			34.97			41.66			35.37
Magnesium					27.76			39.48			46.13			37.94			28.97
Sodium + Potassium					17.52			22.20			18.90			20.40			35.66
					100.0			100.0			100.0						
sum (SO ₄ , Cl, HCO ₃ +CO ₃)				0.91			1.30			1.58			1.21			1.31	
Sulfate					19.140			8.191			17.311			13.372			12.161
Chloride					6.498			6.059			7.555			7.517			6.830
Bicarbonate + Carbonate					74.363			85.750			75.134			79.111			81.009

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from April 1, 2013 to June 30, 2013

Site ID			Cross Gradient						Interior											
			MW-93 4/30/13			MW-95 4/12/13			MW-70 4/23/13			MW-78 4/26/13			MW-77 4/25/13			MW-100 4/30/13		
	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)
Cations																				
Calcium	40.1	2	33.3	1.66168	45.7	19.0	0.9481	45.2	19.7	0.98303	46.7	15.6	0.77844	46.6	22.3	1.11277	46.2	26.2	1.30739	41.6
Magnesium	24.3	2	18.2	1.49763	41.2	10.3	0.84756	40.4	10.1	0.8311	39.5	7.2	0.59576	35.7	11.6	0.95454	39.6	16.1	1.32483	42.2
Potassium	39.1	1	1.5	0.0376	1.0	1.1	0.02839	1.4	1.5	0.03888	1.8	2.0	0.05115	3.1	1.5	0.03862	1.6	1.8	0.04655	1.5
Sodium	23.0	1	9.7	0.42106	11.6	6.1	0.26621	12.7	5.8	0.25229	12.0	5.6	0.24402	14.6	7.0	0.30318	12.6	9.4	0.40714	13.0
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	0.01	0.00036	0.0	1.29	0.0462	1.5
Manganese	54.9	2	0.25	0.00906	0.2	0.13	0.00484	0.2	0.00	3.6E-05	0.0	0.00	3.6E-05	0.0	0.00	7.4E-05	0.0	0.23	0.00823	0.3
Ammonia-N	14.0	1	0.07	0.00498	0.1	0.03	0.00178	0.1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0
Total Cations (meq/L)				3.6			2.1			2.1			1.7			2.4			3.1	
Anions																				
Alkalinity, Total			117			86			82			67			105			134		
Carbonate	60.0	2	0.1113	0.00371	0.1	0.1351	0.0045	0.2	0.0987	0.00329	0.2	0.0196	0.00065	0.0	0.0562	0.00187	0.1	0.057	0.0019	0.1
Bicarbonate	61.0	1	142.51	2.33594	60.0	104.16	1.70724	76.5	100.33	1.64446	78.2	81.33	1.33314	76.8	127.99	2.09781	84.6	163.36	2.6777	84.5
Chloride	35.5	1	3.0	0.08349	2.1	5.9	0.16585	7.4	3.9	0.11029	5.2	6.6	0.18503	10.7	4.8	0.13511	5.5	2.7	0.077	2.4
Nitrate-N	14.0	1	0.02	0.00121	0.0	0.01	0.00071	0.0	0.03	0.00207	0.1	1.00	0.07139	4.1	0.88	0.06247	2.5	0.01	0.00071	0.0
Sulfate	96.1	2	70.6	1.46995	37.7	17.0	0.35395	15.9	16.5	0.34354	16.3	7.0	0.14533	8.4	8.7	0.18177	7.3	19.8	0.41225	13.0
Total Anions (meq/L)				3.9			2.2			2.1			1.7			2.5			3.2	
Total Ions (meq/L)				7.5			4.3			4.2			3.4			4.9			6.3	
Cation/Anion Ratio				0.93			0.94			1.00			0.96			0.97			0.99	
Percent Difference				-3.5			-3.1			0.1			-1.9			-1.4			-0.5	
Trilinear Diagram Data																				
sum (Ca, Mg, Na+K)				3.62			2.09			2.11			1.67			2.41			3.09	
Calcium					45.93			45.36			46.69			46.63			46.19			42.37
Magnesium					41.39			40.55			39.48			35.69			39.62			42.93
Sodium + Potassium					12.68			14.09			13.83			17.68			14.19			14.70
sum (SO ₄ , Cl, HCO ₃ +CO ₃)				3.89			2.23			2.10			1.66			2.42			3.17	
Sulfate					37.758			15.861			16.347			8.733			7.522			13.010
Chloride					2.145			7.432			5.248			11.119			5.591			2.430
Bicarbonate + Carbonate					60.097			76.706			78.405			80.148			86.887			84.560

Data Collected from April 1, 2013 to June 30, 2013

Site ID			Vertical to Facilites												Downgradient Northwest								
			MW-64 4/10/13			MW-68 4/10/13			MW-67 4/23/13			MW-66 4/18/13			MW-72 4/22/13			MW-69 4/19/13					
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	17.2	0.85828	38.0	26.0	1.29741	43.0	31.1	1.5519	44.1	22.7	1.13273	36.8	29.4	1.46707	44.6	29.3	1.46208	45.8			
Magnesium	24.3	2	12.9	1.06151	47.0	15.3	1.259	41.8	18.5	1.52232	43.2	18.4	1.51409	49.2	16.8	1.38243	42.0	15.1	1.24254	38.9			
Potassium	39.1	1	1.4	0.03555	1.6	1.5	0.03939	1.3	1.5	0.03811	1.1	1.2	0.03171	1.0	1.9	0.04757	1.4	1.6	0.04195	1.3			
Sodium	23.0	1	6.8	0.29578	13.1	8.6	0.37364	12.4	9.2	0.40018	11.4	9.1	0.3967	12.9	6.8	0.29665	9.0	9.0	0.39191	12.3			
Iron	55.8	2	0.09	0.00339	0.2	0.99	0.03553	1.2	0.13	0.00473	0.1	0.01	0.00036	0.0	2.30	0.08237	2.5	1.31	0.04691	1.5			
Manganese	54.9	2	0.06	0.00222	0.1	0.23	0.00826	0.3	0.08	0.00289	0.1	0.00	3.6E-05	0.0	0.30	0.01099	0.3	0.20	0.00732	0.2			
Ammonia-N	14.0	1	0.05	0.00353	0.2	0.02	0.00107	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00079	0.0	0.01	0.00071	0.0			
Total Cations (meq/L)			2.3			99.8			3.0			3.5			3.1			3.3			3.2		
Anions																							
Alkalinity, Total			91			133			123			120			115			129					
Carbonate	60.0	2	0.0658	0.00219	0.1	0.1053	0.00351	0.1	0.0909	0.00303	0.1	0.0972	0.00324	0.1	0.0524	0.00175	0.1	0.3076	0.01025	0.3			
Bicarbonate	61.0	1	111.01	1.81953	78.6	162.05	2.65609	85.3	149.88	2.4566	70.4	146.20	2.3964	81.0	140.19	2.29791	70.8	156.75	2.56936	85.8			
Chloride	35.5	1	3.0	0.08377	3.6	2.8	0.07926	2.5	5.0	0.14103	4.0	7.3	0.20478	6.9	6.7	0.18955	5.8	4.3	0.12016	4.0			
Nitrate-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.51	0.03605	1.0	0.73	0.05197	1.8	0.01	0.00093	0.0	0.01	0.00071	0.0			
Sulfate	96.1	2	19.7	0.41017	17.7	17.9	0.37269	12.0	40.9	0.85157	24.4	14.5	0.3019	10.2	36.2	0.75371	23.2	14.1	0.29357	9.8			
Total Anions (meq/L)			2.3			100.0			3.1			3.5			3.0			3.2			3.0		
Total Ions (meq/L)			4.6			6.1			7.0			6.0			6.5			6.2					
Cation/Anion Ratio			0.98			0.97			1.01			1.04			1.01			1.07					
Percent Difference			-1.2			-1.6			0.5			2.0			0.7			3.2					
Trilinear Diagram Data																							
sum (Ca, Mg, Na+K)			2.25			2.97			3.51			3.08			3.19			3.14					
Calcium			38.13			43.69			44.18			36.83			45.94			46.59					
Magnesium			47.15			42.40			43.34			49.23			43.29			39.59					
Sodium + Potassium			14.72			13.91			12.48			13.93			10.78			13.82					
			100.0																				
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			2.32			3.11			3.45			2.91			3.24			2.99					
Sulfate			17.713			11.978			24.667			10.388			23.242			9.808					
Chloride			3.618			2.547			4.085			7.046			5.845			4.014					
Bicarbonate + Carbonate			78.670			85.475			71.247			82.566			70.913			86.178					
			100.0																				

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from April 1, 2013 to June 30, 2013

Site ID			Downgradient																	
			MW-74 4/12/13			MW-87 4/12/13			MW-85 4/29/13			MW-80 4/26/13			MW-75 4/12/13			MW-91 4/9/13		
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	39.7	1.98104	38.3	36.7	1.83134	40.0	22.6	1.12774	42.7	26.8	1.33733	48.2	23.7	1.18263	36.8	21.4	1.06786	38.8
Magnesium	24.3	2	31.5	2.59206	50.1	26.0	2.13948	46.7	13.9	1.1438	43.3	12.9	1.06151	38.3	18.7	1.53878	47.8	14.2	1.16848	42.5
Potassium	39.1	1	1.9	0.04885	0.9	2.0	0.05039	1.1	1.4	0.03606	1.4	1.5	0.03862	1.4	1.6	0.04143	1.3	1.7	0.0422	1.5
Sodium	23.0	1	12.7	0.55242	10.7	9.8	0.42541	9.3	7.7	0.3345	12.7	6.5	0.2823	10.2	8.8	0.38452	12.0	7.5	0.32406	11.8
Iron	55.8	2	0.01	0.00036	0.0	3.31	0.11854	2.6	0.01	0.00036	0.0	1.26	0.04512	1.6	1.77	0.06339	2.0	3.77	0.13501	4.9
Manganese	54.9	2	0.03	0.00108	0.0	0.37	0.01329	0.3	0.00	3.6E-05	0.0	0.22	0.00801	0.3	0.13	0.00488	0.2	0.31	0.0111	0.4
Ammonia-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.03	0.00243	0.1
Total Cations (meq/L)			5.2			4.6			2.6			2.8			3.2			2.8		
Anions																				
Alkalinity, Total			198			89			95			89			98			86		
Carbonate	60.0	2	0.2114	0.00705	0.1	0.0396	0.00132	0.0	0.0485	0.00162	0.1	0.0446	0.00149	0.1	0.081	0.0027	0.1	0.0636	0.00212	0.1
Bicarbonate	61.0	1	241.13	3.95236	77.7	108.38	1.77641	38.0	115.56	1.8941	68.1	108.86	1.78424	63.0	119.03	1.95101	62.2	104.79	1.71762	62.3
Chloride	35.5	1	23.1	0.65157	12.8	6.0	0.16924	3.6	7.4	0.20816	7.5	5.8	0.1636	5.8	8.6	0.24145	7.7	7.6	0.21465	7.8
Nitrate-N	14.0	1	0.44	0.0312	0.6	0.01	0.00071	0.0	0.12	0.00871	0.3	0.03	0.002	0.1	0.01	0.00071	0.0	0.03	0.00214	0.1
Sulfate	96.1	2	21.3	0.44348	8.7	131.0	2.72753	58.3	32.2	0.67043	24.1	42.4	0.8828	31.1	45.3	0.94318	30.0	39.4	0.82034	29.8
Total Anions (meq/L)			5.1			4.7			2.8			2.8			3.1			2.8		
Total Ions (meq/L)			10.3			9.3			5.4			5.6			6.4			5.5		
Cation/Anion Ratio			1.02			0.98			0.95			0.98			1.02			1.00		
Percent Difference			0.9			-1.0			-2.6			-1.1			1.2			-0.1		
Trilinear Diagram Data																				
sum (Ca, Mg, Na+K)			5.17			4.45			2.64			2.72			3.15			2.60		
Calcium					38.29			41.19			42.68			49.17			37.58			41.03
Magnesium					50.09			48.11			43.29			39.03			48.89			44.90
Sodium + Potassium					11.62			10.70			14.03			11.80			13.53			14.07
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			5.05			4.67			2.77			2.83			3.14			2.75		
Sulfate					8.774			58.349			24.166			31.171			30.054			29.779
Chloride					12.891			3.620			7.503			5.776			7.693			7.792
Bicarbonate + Carbonate					78.335			38.030			68.331			63.053			62.253			62.429

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from April 1, 2013 to June 30, 2013

Site ID			Downgradient of North End Facilities														
			MW-86 4/29/13			MW-88 4/29/13			MW-43 4/18/13			MW-90 4/8/13			MW-89 4/19/13		
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	12.9	0.64371	38.4	9.6	0.47804	37.5	12.5	0.62375	35.9	18.0	0.8982	44.0	14.1	0.70359	34.4
Magnesium	24.3	2	8.7	0.71755	42.8	6.7	0.5538	43.4	9.2	0.7554	43.5	9.8	0.80477	39.4	10.6	0.87225	42.7
Potassium	39.1	1	1.2	0.02941	1.8	0.8	0.02141	1.7	1.3	0.03248	1.9	1.3	0.03274	1.6	1.4	0.03632	1.8
Sodium	23.0	1	6.1	0.26534	15.8	5.1	0.22053	17.3	6.5	0.28317	16.3	5.8	0.25055	12.3	9.0	0.39191	19.2
Iron	55.8	2	0.50	0.0178	1.1	0.01	0.00036	0.0	0.91	0.03245	1.9	1.27	0.04548	2.2	0.86	0.03066	1.5
Manganese	54.9	2	0.01	0.0004	0.0	0.00	3.6E-05	0.0	0.21	0.00779	0.4	0.27	0.00965	0.5	0.25	0.00896	0.4
Ammonia-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.1	0.02	0.00178	0.1	0.02	0.00107	0.1	0.01	0.00086	0.0
Total Cations (meq/L)			1.7			1.3			1.7			2.0			2.0		
Anions																	
Alkalinity, Total			62			52			69			68			75		
Carbonate	60.0	2	0.02305	0.00077	0.0	0.01359	0.00045	0.0	0.10398	0.00347	0.2	0.03409	0.00114	0.1	0.07606	0.00254	0.1
Bicarbonate	61.0	1	75.84	1.24304	71.5	63.17	1.03539	80.1	83.97	1.37633	77.4	83.13	1.36266	67.7	90.86	1.48924	76.8
Chloride	35.5	1	4.3	0.12016	6.9	2.6	0.07305	5.7	3.9	0.10944	6.2	3.7	0.10521	5.2	4.1	0.11424	5.9
Nitrate-N	14.0	1	0.27	0.01913	1.1	0.56	0.03962	3.1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0
Sulfate	96.1	2	17.1	0.35604	20.5	6.9	0.14429	11.2	13.8	0.28733	16.2	26.1	0.54342	27.0	16.0	0.33313	17.2
Total Anions (meq/L)			1.7			1.3			1.8			2.0			1.9		
Total Ions (meq/L)			3.4			2.6			3.5			4.1			4.0		
Cation/Anion Ratio			0.96			0.99			0.98			1.01			1.05		
Percent Difference			-1.9			-0.7			-1.2			0.7			2.6		
Trilinear Diagram Data																	
sum (Ca, Mg, Na+K)			1.66			1.27			1.69			1.99			2.00		
Calcium			38.87			37.53			36.80			45.22			35.11		
Magnesium			43.33			43.48			44.57			40.52			43.52		
Sodium + Potassium			17.80			18.99			18.62			14.26			21.37		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.72			1.25			1.78			2.01			1.94		
Sulfate			20.700			11.514			16.173			27.003			17.179		
Chloride			6.986			5.829			6.160			5.228			5.891		
Bicarbonate + Carbonate			72.314			82.657			77.666			67.769			76.930		

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from July 1, 2013 to September 30, 2013

Site ID			Upgradient South																	
			MW-24 7/2/13			MW-56 7/3/13			MW-57 7/3/13			MW-59 7/2/13			MW-60 7/3/13			MW-65 7/8/13		
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	15.0	0.7485	37.4	16.3	0.81337	46.9	17.5	0.87325	37.5	15.2	0.75848	37.9	19.2	0.95808	46.8	13.0	0.6487	37.1
Magnesium	24.3	2	10.1	0.8311	41.6	7.8	0.64267	37.1	9.8	0.8023	34.4	9.6	0.78667	39.3	9.0	0.74388	36.3	7.9	0.64925	37.2
Potassium	39.1	1	0.9	0.02376	1.2	1.2	0.03171	1.8	1.0	0.02634	1.1	1.1	0.02737	1.4	1.4	0.03632	1.8	1.1	0.02813	1.6
Sodium	23.0	1	6.0	0.26186	13.1	5.5	0.23924	13.8	7.2	0.31101	13.3	6.0	0.26099	13.0	6.7	0.29274	14.3	5.2	0.22793	13.1
Iron	55.8	2	3.53	0.12642	6.3	0.02	0.00064	0.0	8.58	0.30727	13.2	4.57	0.16366	8.2	0.05	0.00191	0.1	5.13	0.18372	10.5
Manganese	54.9	2	0.14	0.0051	0.3	0.13	0.00481	0.3	0.26	0.00954	0.4	0.12	0.00419	0.2	0.00	9E-05	0.0	0.21	0.00757	0.4
Ammonia-N	14.0	1	0.04	0.0029	0.1	0.01	0.00071	0.0	0.02	0.00143	0.1	0.01	0.00071	0.0	0.21	0.01471	0.7	0.01	0.00093	0.1
Total Cations (meq/L)			2.0			1.7			2.3			2.0			2.0			1.7		
Anions																				
Alkalinity, Total			62			56			72			62			77			53		
Carbonate	60.0	2	0.0526	0.00175	0.1	0.0424	0.00141	0.1	0.0299	0.001	0.1	0.047	0.00157	0.1	0.0623	0.00208	0.1	0.0279	0.00093	0.1
Bicarbonate	61.0	1	75.53	1.23806	73.4	68.36	1.12042	68.2	87.54	1.43479	72.5	75.67	1.24025	71.7	93.69	1.53569	66.8	65.09	1.06691	69.2
Chloride	35.5	1	3.6	0.10013	5.9	4.0	0.11395	6.9	6.0	0.16952	8.6	4.1	0.11424	6.6	19.0	0.53592	23.3	4.2	0.11847	7.7
Nitrate-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.03	0.00228	0.1	0.01	0.00071	0.0	1.12	0.07996	3.5	0.01	0.00071	0.0
Sulfate	96.1	2	16.6	0.34563	20.5	19.5	0.40601	24.7	17.9	0.37269	18.8	17.9	0.37269	21.5	6.9	0.14366	6.3	17.0	0.35395	23.0
Total Anions (meq/L)			1.7			1.6			2.0			1.7			2.3			1.5		
Total Ions (meq/L)			3.7			3.4			4.3			3.7			4.3			3.3		
Cation/Anion Ratio			1.19			1.06			1.18			1.16			0.89			1.13		
Percent Difference			8.5			2.7			8.1			7.3			-5.7			6.2		
Trilinear Diagram Data																				
sum (Ca, Mg, Na+K)			1.87			1.73			2.01			1.83			2.03			1.55		
Calcium			40.13			47.10			43.38			41.37			47.17			41.74		
Magnesium			44.56			37.21			39.86			42.91			36.63			41.78		
Sodium + Potassium			15.31			15.69			16.76			15.73			16.20			16.48		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.69			1.64			1.98			1.73			2.22			1.54		
Sulfate			20.505			24.729			18.842			21.559			6.479			22.980		
Chloride			5.941			6.941			8.570			6.608			24.169			7.691		
Bicarbonate + Carbonate			73.554			68.330			72.588			71.833			69.352			69.328		

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from July 1, 2013 to September 30, 2013

Site ID			Upgradient South														
			MW-76 7/15/13			MW-82 7/23/13			MW-83 7/17/13			MW-94 7/23/13			MW-21 7/2/13		
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	19.5	0.97305	46.9	25.9	1.29242	43.8	36.9	1.84132	53.7	27.4	1.36727	49.5	10.8	0.53892	39.0
Magnesium	24.3	2	8.7	0.71508	34.5	15.6	1.28369	43.5	14.5	1.19317	34.8	12.5	1.02859	37.2	6.2	0.50936	36.8
Potassium	39.1	1	1.5	0.03888	1.9	1.7	0.0445	1.5	2.4	0.06036	1.8	2.1	0.05243	1.9	1.1	0.02762	2.0
Sodium	23.0	1	8.0	0.34755	16.7	7.5	0.32754	11.1	7.7	0.33319	9.7	7.2	0.31362	11.4	5.6	0.24315	17.6
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	1.68	0.06016	4.3
Manganese	54.9	2	0.00	3.6E-05	0.0	0.00	3.6E-05	0.0	0.01	0.00031	0.0	0.00	3.6E-05	0.0	0.09	0.00336	0.2
Ammonia-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00079	0.1
Total Cations (meq/L)			2.1			2.9			3.4			2.8			1.4		
Anions																	
Alkalinity, Total			66			122			117			106			52		
Carbonate	60.0	2	0.0116	0.00039	0.0	0.0902	0.00301	0.1	0.0571	0.00191	0.1	0.0555	0.00185	0.1	0.0703	0.00234	0.2
Bicarbonate	61.0	1	80.01	1.31141	64.3	148.66	2.43663	81.3	142.62	2.33774	71.5	129.21	2.11783	74.8	63.66	1.0435	76.6
Chloride	35.5	1	13.4	0.37797	18.5	5.9	0.16585	5.5	24.8	0.69952	21.4	18.3	0.51618	18.2	7.6	0.21521	15.8
Nitrate-N	14.0	1	0.33	0.02385	1.2	0.70	0.04962	1.7	0.66	0.04726	1.4	0.98	0.07011	2.5	0.01	0.00071	0.1
Sulfate	96.1	2	15.6	0.32481	15.9	16.5	0.34354	11.5	8.9	0.18531	5.7	6.0	0.12555	4.4	4.8	0.10015	7.4
Total Anions (meq/L)			2.0			3.0			3.3			2.8			1.4		
Total Ions (meq/L)			4.1			5.9			6.7			5.6			2.7		
Cation/Anion Ratio			1.02			0.98			1.05			0.98			1.02		
Percent Difference			0.9			-0.8			2.4			-1.2			0.8		
Trilinear Diagram Data																	
sum (Ca, Mg, Na+K)			2.07			2.95			3.43			2.76			1.32		
Calcium			46.90			43.84			53.71			49.50			40.86		
Magnesium			34.47			43.54			34.81			37.24			38.62		
Sodium + Potassium			18.63			12.62			11.48			13.25			20.53		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			2.01			2.95			3.22			2.76			1.36		
Sulfate			16.123			11.649			5.747			4.547			7.357		
Chloride			18.762			5.624			21.694			18.693			15.811		
Bicarbonate + Carbonate			65.116			82.727			72.559			76.761			76.832		

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from July 1, 2013 to September 30, 2013

Site ID			Upgradient Northwest									Upgradient Northeast					
			MW-73 7/23/13			MW-84 7/9/13			MW-81 7/23/13			MW-99 7/19/13			MW-93 7/9/13		
	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)
Cations																	
Calcium	40.1	2	12.3	0.61377	44.3	11.9	0.59381	36.1	10.8	0.53892	41.5	9.8	0.48653	38.0	39.3	1.96108	48.1
Magnesium	24.3	2	6.2	0.50854	36.7	9.4	0.77103	46.8	6.0	0.49373	38.0	4.3	0.35466	27.7	19.9	1.63752	40.2
Potassium	39.1	1	0.8	0.01982	1.4	1.2	0.02941	1.8	0.7	0.01867	1.4	0.8	0.02102	1.6	1.9	0.04808	1.2
Sodium	23.0	1	5.6	0.24315	17.5	5.7	0.24968	15.2	5.7	0.24576	18.9	9.4	0.40888	32.0	9.5	0.41192	10.1
Iron	55.8	2	0.01	0.00036	0.0	0.01	0.00036	0.0	0.01	0.00036	0.0	0.02	0.00068	0.1	0.01	0.00036	0.0
Manganese	54.9	2	0.00	3.6E-05	0.0	0.00	0.00014	0.0	0.00	3.6E-05	0.0	0.08	0.00278	0.2	0.29	0.01067	0.3
Ammonia-N	14.0	1	0.01	0.00071	0.1	0.04	0.00254	0.2	0.01	0.00071	0.1	0.07	0.00497	0.4	0.07	0.0047	0.1
Total Cations (meq/L)				1.4			1.6			1.3			1.3			4.1	
Anions																	
Alkalinity, Total			53			61			48			53			118		
Carbonate	60.0	2	0.0276	0.00092	0.1	0.0399	0.00133	0.1	0.0973	0.00324	0.2	0.2174	0.00725	0.6	0.1176	0.00392	0.1
Bicarbonate	61.0	1	64.24	1.05292	74.6	73.73	1.20849	74.2	58.24	0.95461	71.7	63.73	1.0446	79.5	143.72	2.35573	57.6
Chloride	35.5	1	2.5	0.07164	5.1	4.2	0.11734	7.2	3.4	0.09562	7.2	3.1	0.08603	6.5	2.7	0.07672	1.9
Nitrate-N	14.0	1	1.48	0.10566	7.5	0.62	0.04405	2.7	1.67	0.11923	9.0	0.18	0.01264	1.0	0.01	0.00071	0.0
Sulfate	96.1	2	8.6	0.17948	12.7	12.4	0.25818	15.8	7.6	0.15803	11.9	7.9	0.16386	12.5	79.4	1.65317	40.4
Total Anions (meq/L)				1.4			1.6			1.3			1.3			4.1	
Total Ions (meq/L)				2.8			3.3			2.6			2.6			8.2	
Cation/Anion Ratio				0.98			1.01			0.98			0.97			1.00	
Percent Difference				-0.9			0.5			-1.2			-1.3			-0.2	
Trilinear Diagram Data																	
sum (Ca, Mg, Na+K)				1.39			1.64			1.30			1.27			4.06	
Calcium					44.31			36.12			41.55			38.28			48.32
Magnesium					36.71			46.90			38.06			27.90			40.35
Sodium + Potassium					18.98			16.98			20.39			33.82			11.33
					100.0			100.0			100.0						
sum (SO ₄ , Cl, HCO ₃ +CO ₃)				1.30			1.59			1.21			1.30			4.09	
Sulfate					13.753			16.285			13.044			12.588			40.424
Chloride					5.490			7.401			7.893			6.609			1.876
Bicarbonate + Carbonate					80.757			76.313			79.063			80.803			57.700

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from July 1, 2013 to September 30, 2013

Site ID			Cross Gradient						Interior											
			MW-95 7/9/13			MW-70 7/17/13			MW-77 8/2/13			MW-78 7/3/13			MW-100 7/9/13			MW-64 7/31/13		
	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)
Cations																				
Calcium	40.1	2	21.1	1.05289	46.7	19.0	0.9481	46.7	20.2	1.00798	43.4	17.8	0.88822	45.3	28.9	1.44212	42.9	17.3	0.86327	38.9
Magnesium	24.3	2	11.0	0.90516	40.2	9.5	0.78173	38.5	11.6	0.95454	41.1	8.6	0.7052	35.9	17.1	1.40712	41.9	12.4	1.02037	46.0
Potassium	39.1	1	1.4	0.0353	1.6	1.5	0.03811	1.9	1.6	0.04169	1.8	2.2	0.05729	2.9	2.1	0.05448	1.6	1.5	0.03734	1.7
Sodium	23.0	1	5.8	0.25229	11.2	6.0	0.25925	12.8	7.3	0.31927	13.7	7.1	0.31014	15.8	8.9	0.38887	11.6	6.7	0.291	13.1
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	1.55	0.05551	1.7	0.09	0.00336	0.2
Manganese	54.9	2	0.15	0.00535	0.2	0.00	3.6E-05	0.0	0.00	7.1E-05	0.0	0.00	3.6E-05	0.0	0.26	0.00936	0.3	0.04	0.00136	0.1
Ammonia-N	14.0	1	0.02	0.00157	0.1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00079	0.0	0.04	0.00289	0.1
Total Cations (meq/L)			2.3			2.0			2.3			2.0			3.4			2.2		
Anions																				
Alkalinity, Total			86			80			99			69			135			90		
Carbonate	60.0	2	0.1363	0.00454	0.2	0.1695	0.00565	0.3	0.0729	0.00243	0.1	0.0228	0.00076	0.0	0.069	0.0023	0.1	0.0742	0.00247	0.1
Bicarbonate	61.0	1	105.13	1.7232	77.9	96.89	1.58811	76.8	120.14	1.96927	84.5	84.26	1.38103	73.0	164.56	2.69729	83.9	109.04	1.78726	79.6
Chloride	35.5	1	5.0	0.14131	6.4	5.2	0.14639	7.1	4.4	0.12439	5.3	9.3	0.26091	13.8	2.9	0.08264	2.6	2.9	0.08208	3.7
Nitrate-N	14.0	1	0.01	0.00071	0.0	0.06	0.00393	0.2	0.87	0.06204	2.7	1.19	0.08496	4.5	0.01	0.00071	0.0	0.01	0.00093	0.0
Sulfate	96.1	2	16.5	0.34354	15.5	15.5	0.32272	15.6	8.3	0.1724	7.4	7.9	0.16344	8.6	20.7	0.43099	13.4	17.9	0.37269	16.6
Total Anions (meq/L)			2.2			2.1			2.3			1.9			3.2			2.2		
Total Ions (meq/L)			4.5			4.1			4.7			3.9			6.6			4.5		
Cation/Anion Ratio			1.02			0.98			1.00			1.04			1.04			0.99		
Percent Difference			0.9			-0.9			-0.1			1.8			2.2			-0.6		
Trilinear Diagram Data																				
sum (Ca, Mg, Na+K)			2.25			2.03			2.32			1.96			3.29			2.21		
Calcium					46.89			46.77			43.38			45.30			43.80			39.03
Magnesium					40.31			38.56			41.08			35.96			42.74			46.13
Sodium + Potassium					12.81			14.67			15.54			18.74			13.47			14.84
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			2.21			2.06			2.27			1.81			3.21			2.24		
Sulfate					15.527			15.644			7.600			9.049			13.413			16.605
Chloride					6.387			7.096			5.483			14.446			2.572			3.657
Bicarbonate + Carbonate					78.086			77.259			86.917			76.505			84.015			79.738

Data Collected from July 1, 2013 to September 30, 2013

Site ID			Vertical to Faciles												Downgradient Northwest								
			MW-66 7/15/13			MW-67 7/12/13			MW-68 7/12/13			MW-69 7/19/13			MW-72 7/22/13			MW-74 7/18/13					
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	21.4	1.06786	37.6	31.6	1.57685	44.9	28.8	1.43713	45.3	29.9	1.49202	50.2	28.1	1.4022	44.2	44.8	2.23553	41.6			
Magnesium	24.3	2	16.8	1.38243	48.7	18.4	1.51409	43.1	15.8	1.30014	41.0	12.9	1.06151	35.7	15.9	1.30837	41.3	31.2	2.56737	47.8			
Potassium	39.1	1	1.5	0.03785	1.3	1.8	0.04527	1.3	1.9	0.04732	1.5	1.6	0.04118	1.4	1.7	0.04348	1.4	2.1	0.05243	1.0			
Sodium	23.0	1	8.0	0.34755	12.3	8.4	0.36407	10.4	7.8	0.33928	10.7	7.6	0.33058	11.1	7.5	0.3258	10.3	11.9	0.51762	9.6			
Iron	55.8	2	0.01	0.00036	0.0	0.17	0.00591	0.2	1.07	0.03832	1.2	1.04	0.03724	1.3	2.20	0.07879	2.5	0.01	0.00036	0.0			
Manganese	54.9	2	0.00	3.6E-05	0.0	0.13	0.00466	0.1	0.28	0.01005	0.3	0.21	0.00772	0.3	0.30	0.01081	0.3	0.00	3.6E-05	0.0			
Ammonia-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.001	0.0	0.02	0.00136	0.0	0.02	0.00146	0.0	0.01	0.00071	0.0			
Total Cations (meq/L)			2.8			100.0			3.5			3.2			3.0			3.2			5.4		
Anions																							
Alkalinity, Total			117			125			131			129			115			218					
Carbonate	60.0	2	0.1063	0.00354	0.1	0.0843	0.00281	0.1	0.0863	0.00288	0.1	0.2035	0.00678	0.2	0.107	0.00357	0.1	0.1807	0.00602	0.1			
Bicarbonate	61.0	1	142.52	2.3361	79.5	152.33	2.49681	72.9	159.64	2.61673	86.3	156.97	2.57283	86.7	140.08	2.29609	69.2	265.59	4.35332	77.6			
Chloride	35.5	1	8.5	0.23975	8.2	4.6	0.1289	3.8	2.6	0.07193	2.4	3.8	0.10634	3.6	8.0	0.22593	6.8	25.0	0.70516	12.6			
Nitrate-N	14.0	1	0.73	0.0524	1.8	0.43	0.03098	0.9	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.42	0.02977	0.5			
Sulfate	96.1	2	14.8	0.30815	10.5	36.7	0.76412	22.3	16.4	0.34146	11.3	13.5	0.28108	9.5	38.0	0.79119	23.8	24.6	0.51219	9.1			
Total Anions (meq/L)			2.9			100.0			3.4			3.0			3.3			5.6					
Total Ions (meq/L)			5.8			6.9			6.2			5.9			6.5			11.0					
Cation/Anion Ratio			0.96			1.03			1.05			1.00			0.96			0.96					
Percent Difference			-1.8			1.3			2.2			0.1			-2.3			-2.1					
Trilinear Diagram Data																							
sum (Ca, Mg, Na+K)			2.84			3.50			3.12			2.93			3.08			5.37					
Calcium					37.66			45.05			46.00			51.00			45.53			41.61			
Magnesium					48.75			43.26			41.62			36.29			42.48			47.78			
Sodium + Potassium					13.59			11.69			12.38			12.71			11.99			10.61			
					100.0																		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			2.89			3.39			3.03			2.97			3.32			5.58					
Sulfate					10.672			22.523			11.258			9.473			23.854			9.185			
Chloride					8.303			3.799			2.371			3.584			6.812			12.645			
Bicarbonate + Carbonate					81.025			73.678			86.370			86.943			69.334			78.171			
					100.0																		

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from July 1, 2013 to September 30, 2013

Site ID			Downgradient																	
			MW-75 7/18/13			MW-80 7/18/13			MW-85 7/22/13			MW-86 7/22/13			MW-87 7/19/13			MW-88 7/17/13		
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	25.2	1.25749	39.8	28.1	1.4022	48.5	24.0	1.1976	44.1	13.6	0.67864	39.5	38.9	1.94112	43.1	9.4	0.46956	36.1
Magnesium	24.3	2	17.6	1.44826	45.8	13.1	1.07797	37.3	13.8	1.13557	41.8	8.9	0.73071	42.6	23.8	1.95844	43.5	7.0	0.5719	43.9
Potassium	39.1	1	1.8	0.04476	1.4	1.6	0.04016	1.4	1.3	0.03376	1.2	1.1	0.02813	1.6	2.1	0.05448	1.2	0.9	0.02384	1.8
Sodium	23.0	1	8.1	0.35233	11.1	7.0	0.30274	10.5	8.0	0.34711	12.8	6.2	0.27056	15.8	9.3	0.40583	9.0	5.4	0.23532	18.1
Iron	55.8	2	1.53	0.05479	1.7	1.60	0.0573	2.0	0.01	0.00036	0.0	0.21	0.00748	0.4	3.46	0.12391	2.8	0.01	0.00036	0.0
Manganese	54.9	2	0.12	0.00451	0.1	0.25	0.00906	0.3	0.00	3.6E-05	0.0	0.01	0.00021	0.0	0.39	0.01409	0.3	0.00	3.6E-05	0.0
Ammonia-N	14.0	1	0.01	0.00079	0.0	0.01	0.00086	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.02	0.00121	0.0	0.01	0.00071	0.1
Total Cations (meq/L)			3.2			2.9			2.7			1.7			4.5			1.3		
Anions																				
Alkalinity, Total			96			91			96			63			86			51		
Carbonate	60.0	2	0.0677	0.00226	0.1	0.0865	0.00288	0.1	0.1234	0.00411	0.1	0.0631	0.0021	0.1	0.0319	0.00106	0.0	0.0608	0.00203	0.2
Bicarbonate	61.0	1	116.86	1.91545	62.0	110.72	1.81484	63.0	117.11	1.9196	67.7	77.10	1.26371	73.3	105.10	1.72268	37.4	61.85	1.01382	78.3
Chloride	35.5	1	8.4	0.2375	7.7	4.6	0.13088	4.5	7.5	0.21239	7.5	4.0	0.11311	6.6	5.4	0.15231	3.3	3.4	0.09703	7.5
Nitrate-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.18	0.01278	0.5	0.46	0.03284	1.9	0.01	0.00071	0.0	0.63	0.04483	3.5
Sulfate	96.1	2	44.9	0.93486	30.2	44.8	0.93277	32.4	33.0	0.68709	24.2	15.0	0.31231	18.1	131.0	2.72753	59.2	6.6	0.13638	10.5
Total Anions (meq/L)			3.1			2.9			2.8			1.7			4.6			1.3		
Total Ions (meq/L)			6.3			5.8			5.6			3.4			9.1			2.6		
Cation/Anion Ratio			1.02			1.00			0.96			1.00			0.98			1.01		
Percent Difference			1.2			0.1			-2.2			-0.2			-1.2			0.3		
Trilinear Diagram Data																				
sum (Ca, Mg, Na+K)			3.10			2.82			2.71			1.71			4.36			1.30		
Calcium			40.53			49.67			44.13			39.73			44.52			36.10		
Magnesium			46.68			38.18			41.84			42.78			44.92			43.97		
Sodium + Potassium			12.80			12.15			14.03			17.49			10.56			19.93		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			3.09			2.88			2.82			1.69			4.60			1.25		
Sulfate			30.254			32.372			24.337			18.467			59.248			10.917		
Chloride			7.686			4.542			7.523			6.688			3.309			7.767		
Bicarbonate + Carbonate			62.061			63.085			68.140			74.846			37.443			81.316		

Ion Balance Calculations

Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from July 1, 2013 to September 30, 2013

Site ID			Downgradient of North End Facilities														
			MW-89 8/1/13			MW-90 7/22/13			MW-91 7/8/13			MW-43 7/2/13			MW-89 1/10/13		
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	13.1	0.65369	34.5	17.0	0.8483	43.6	23.8	1.18762	40.2	14.7	0.73353	37.4	14.1	0.70359	34.4
Magnesium	24.3	2	10.1	0.8311	43.8	9.2	0.75458	38.8	15.7	1.29192	43.7	10.3	0.84756	43.2	10.6	0.87225	42.7
Potassium	39.1	1	1.7	0.04399	2.3	1.3	0.03274	1.7	1.9	0.04962	1.7	1.4	0.03555	1.8	1.4	0.03632	1.8
Sodium	23.0	1	7.5	0.32754	17.3	6.0	0.26186	13.5	7.3	0.31927	10.8	6.8	0.29752	15.2	9.0	0.39191	19.2
Iron	55.8	2	0.87	0.03105	1.6	1.04	0.03724	1.9	2.50	0.08953	3.0	1.01	0.03617	1.8	0.86	0.03066	1.5
Manganese	54.9	2	0.21	0.00761	0.4	0.25	0.0091	0.5	0.38	0.01365	0.5	0.26	0.00928	0.5	0.25	0.00896	0.4
Ammonia-N	14.0	1	0.02	0.00146	0.1	0.02	0.00121	0.1	0.03	0.00224	0.1	0.03	0.0018	0.1	0.01	0.00086	0.0
Total Cations (meq/L)			1.9			1.9			3.0			2.0			2.0		
Anions																	
Alkalinity, Total			72			68			87			69			75		
Carbonate	60.0	2	0.08439	0.00281	0.1	0.07612	0.00254	0.1	0.06276	0.00209	0.1	0.10368	0.00346	0.2	0.07606	0.00254	0.1
Bicarbonate	61.0	1	87.79	1.43897	76.2	82.93	1.35926	66.8	105.89	1.73565	62.0	83.73	1.37234	77.8	90.86	1.48924	76.8
Chloride	35.5	1	3.7	0.1038	5.5	4.9	0.13736	6.8	7.9	0.22368	8.0	3.8	0.10662	6.0	4.1	0.11424	5.9
Nitrate-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.03	0.00221	0.1	0.01	0.00071	0.0	0.01	0.00071	0.0
Sulfate	96.1	2	16.4	0.34146	18.1	25.7	0.5351	26.3	40.2	0.837	29.9	13.5	0.28108	15.9	16.0	0.33313	17.2
Total Anions (meq/L)			1.9			2.0			2.8			1.8			1.9		
Total Ions (meq/L)			3.8			4.0			5.8			3.7			4.0		
Cation/Anion Ratio			1.00			0.96			1.05			1.11			1.05		
Percent Difference			0.2			-2.3			2.7			5.3			2.6		
Trilinear Diagram Data																	
sum (Ca, Mg, Na+K)			1.86			1.90			2.85			1.91			2.00		
Calcium					35.21			44.71			41.69			38.32			35.11
Magnesium					44.77			39.77			45.36			44.28			43.52
Sodium + Potassium					20.01			15.53			12.95			17.40			21.37
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.89			2.03			2.80			1.76			1.94		
Sulfate					18.095			26.304			29.910			15.939			17.179
Chloride					5.501			6.753			7.993			6.046			5.891
Bicarbonate + Carbonate					76.404			66.943			62.097			78.015			76.930

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from October 1, 2013 to December 31, 2013

Site ID			Upgradient South																	
			MW-24 10/17/13			MW-56 10/3/13			MW-57 10/9/13			MW-82 No Sample			MW-59 10/9/13			MW-60 10/15/13		
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	12.2	0.60878	37.7	14.8	0.73852	46.7	14.8	0.73852	37.5				13.1	0.65369	38.5	15.6	0.77844	47.5
Magnesium	24.3	2	8.0	0.66077	40.9	7.3	0.59659	37.7	8.2	0.67147	34.1				8.0	0.65501	38.6	7.4	0.61057	37.3
Potassium	39.1	1	0.8	0.02023	1.3	1.1	0.02762	1.7	0.8	0.02049	1.0				0.9	0.02389	1.4	1.0	0.02499	1.5
Sodium	23.0	1	5.0	0.21879	13.5	4.9	0.21227	13.4	5.8	0.25098	12.8				5.2	0.22445	13.2	5.1	0.22097	13.5
Iron	55.8	2	2.79	0.09992	6.2	0.03	0.00115	0.1	7.70	0.27575	14.0				3.78	0.13537	8.0	0.04	0.0014	0.1
Manganese	54.9	2	0.10	0.00363	0.2	0.14	0.00517	0.3	0.23	0.00834	0.4				0.10	0.00347	0.2	0.00	3.6E-05	0.0
Ammonia-N	14.0	1	0.04	0.00275	0.2	0.01	0.00071	0.0	0.03	0.002	0.1				0.01	0.00086	0.1	0.01	0.00071	0.0
Total Cations (meq/L)			1.6			1.6			2.0						1.7			1.6		
Anions																				
Alkalinity, Total			59			52			64						57			72		
Carbonate	60.0	2	0.0492	0.00164	0.1	0.033	0.0011	0.1	0.0201	0.00067	0.0				0.0322	0.00107	0.1	0.0392	0.00131	0.1
Bicarbonate	61.0	1	72.25	1.18418	73.0	63.86	1.04674	67.3	77.67	1.27314	70.4				69.96	1.14675	69.9	87.15	1.42848	82.4
Chloride	35.5	1	3.7	0.10408	6.4	3.9	0.10888	7.0	5.9	0.16614	9.2				4.6	0.12834	7.8	2.4	0.06657	3.8
Nitrate-N	14.0	1	0.01	0.00071	0.0	0.02	0.00164	0.1	0.02	0.00114	0.1				0.01	0.00071	0.0	1.33	0.09495	5.5
Sulfate	96.1	2	15.9	0.33105	20.4	19.1	0.39768	25.6	17.7	0.36853	20.4				17.5	0.36436	22.2	6.8	0.14137	8.2
Total Anions (meq/L)			1.6			1.6			1.8						1.6			1.7		
Total Ions (meq/L)			3.2			3.1			3.8						3.3			3.4		
Cation/Anion Ratio			1.00			1.02			1.09						1.03			0.94		
Percent Difference			-0.2			0.8			4.2						1.7			-2.8		
Trilinear Diagram Data																				
sum (Ca, Mg, Na+K)			1.51			1.57			1.68						1.56			1.63		
Calcium			40.35			46.89			43.92						41.98			47.61		
Magnesium			43.80			37.88			39.93						42.07			37.34		
Sodium + Potassium			15.84			15.23			16.14						15.95			15.04		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.62			1.55			1.81						1.64			1.64		
Sulfate			20.423			25.584			20.378						22.210			8.632		
Chloride			6.421			7.004			9.187						7.823			4.065		
Bicarbonate + Carbonate			73.156			67.411			70.436						69.967			87.303		

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from October 1, 2013 to December 31, 2013

Site ID			Upgradient South														
			MW-65 10/15/13			MW-76 10/31/13			MW-58A No Sample			MW-83 10/3/13			MW-94 10/25/13		
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	11.3	0.56387	37.7	18.0	0.8982	46.0				37.3	1.86128	53.4	27.4	1.36727	50.3
Magnesium	24.3	2	6.7	0.54804	36.6	8.3	0.68052	34.9				14.9	1.22609	35.2	12.1	0.99568	36.6
Potassium	39.1	1	0.8	0.02161	1.4	1.2	0.03018	1.5				2.7	0.07008	2.0	2.2	0.05499	2.0
Sodium	23.0	1	4.9	0.2127	14.2	7.9	0.34233	17.5				7.5	0.32667	9.4	6.9	0.301	11.1
Iron	55.8	2	3.97	0.14217	9.5	0.01	0.00036	0.0				0.01	0.00036	0.0	0.01	0.00036	0.0
Manganese	54.9	2	0.19	0.00706	0.5	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	0.001	0.1	0.01	0.00071	0.0				0.01	0.00071	0.0	0.01	0.00071	0.0
Total Cations (meq/L)			1.5			2.0						3.5			2.7		
Anions																	
Alkalinity, Total			50			56						123			97		
Carbonate	60.0	2	0.0239	0.0008	0.1	0.0063	0.00021	0.0				0.0548	0.00183	0.1	0.0652	0.00217	0.1
Bicarbonate	61.0	1	61.07	1.00105	68.4	68.80	1.12762	65.6				149.95	2.4578	69.1	117.96	1.93353	74.0
Chloride	35.5	1	4.2	0.11706	8.0	10.6	0.29899	17.4				30.6	0.86311	24.3	17.4	0.49079	18.8
Nitrate-N	14.0	1	0.01	0.00086	0.1	0.50	0.03534	2.1				0.78	0.0554	1.6	0.90	0.0644	2.5
Sulfate	96.1	2	16.5	0.34354	23.5	12.3	0.2561	14.9				8.5	0.17719	5.0	5.9	0.12326	4.7
Total Anions (meq/L)			1.5			1.7						3.6			2.6		
Total Ions (meq/L)			3.0			3.7						7.0			5.3		
Cation/Anion Ratio			1.02			1.14						0.98			1.04		
Percent Difference			1.1			6.4						-1.0			2.0		
Trilinear Diagram Data																	
sum (Ca, Mg, Na+K)			1.35			1.95						3.48			2.72		
Calcium						41.89			46.03						50.29		
Magnesium						40.71			34.88						36.62		
Sodium + Potassium						17.41			19.09						13.09		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.46			1.68						3.50			2.55		
Sulfate						23.491			15.217						4.834		
Chloride						8.004			17.766						19.249		
Bicarbonate + Carbonate						68.505			67.017						75.917		

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from October 1, 2013 to December 31, 2013

Site ID			Upgradient Northwest									Upgradient Northeast					
			MW-21 10/22/13			MW-73 10/16/13			MW-84 10/10/13			MW-81 10/25/13			MW-99 10/22/13		
	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)
Cations																	
Calcium	40.1	2	10.5	0.52395	43.0	10.4	0.51896	57.3	10.3	0.51397	36.0	11.2	0.55888	42.4	9.2	0.46108	40.2
Magnesium	24.3	2	4.9	0.39909	32.8	3.0	0.24439	27.0	7.9	0.65336	45.8	6.0	0.49126	37.3	3.7	0.30611	26.7
Potassium	39.1	1	1.1	0.02813	2.3	0.7	0.01818	2.0	0.9	0.02292	1.6	0.8	0.01949	1.5	0.9	0.02197	1.9
Sodium	23.0	1	4.6	0.20139	16.5	2.8	0.12266	13.5	5.4	0.23576	16.5	5.7	0.24707	18.7	8.0	0.34798	30.4
Iron	55.8	2	1.74	0.06231	5.1	0.01	0.00036	0.0	0.01	0.00036	0.0	0.01	0.00036	0.0	0.03	0.00093	0.1
Manganese	54.9	2	0.08	0.00276	0.2	0.00	3.6E-05	0.0	0.00	7.7E-05	0.0	0.00	3.6E-05	0.0	0.07	0.00255	0.2
Ammonia-N	14.0	1	0.01	0.00078	0.1	0.01	0.00086	0.1	0.01	0.00071	0.1	0.01	0.00071	0.1	0.08	0.00565	0.5
Total Cations (meq/L)				1.2			0.9			1.4			1.3			1.1	
Anions																	
Alkalinity, Total			49			33			54			43			49		
Carbonate	60.0	2	0.1095	0.00365	0.3	0.0026	8.7E-05	0.0	0.024	0.0008	0.1	0.0765	0.00255	0.2	0.3099	0.01033	0.8
Bicarbonate	61.0	1	59.80	0.9802	84.7	40.01	0.65581	65.1	65.71	1.07704	72.7	52.55	0.86132	70.2	58.66	0.96153	78.8
Chloride	35.5	1	2.8	0.07841	6.8	2.5	0.06995	6.9	3.7	0.10465	7.1	3.5	0.09929	8.1	3.0	0.0849	7.0
Nitrate-N	14.0	1	0.01	0.00071	0.1	1.31	0.09352	9.3	0.58	0.04112	2.8	1.62	0.11566	9.4	0.12	0.00885	0.7
Sulfate	96.1	2	4.5	0.09453	8.2	9.0	0.1876	18.6	12.4	0.25818	17.4	7.1	0.14741	12.0	7.4	0.1547	12.7
Total Anions (meq/L)				1.2			1.0			1.5			1.2			1.2	
Total Ions (meq/L)				2.4			1.9			2.9			2.5			2.4	
Cation/Anion Ratio				1.05			0.90			0.96			1.07			0.94	
Percent Difference				2.6			-5.3			-1.9			3.6			-3.1	
Trilinear Diagram Data																	
sum (Ca, Mg, Na+K)				1.15			0.90			1.43			1.32			1.14	
Calcium					45.46			57.39			36.04			42.45			40.55
Magnesium					34.63			27.03			45.82			37.31			26.92
Sodium + Potassium					19.91			15.58			18.14			20.24			32.53
					100.0			100.0			100.0						
sum (SO ₄ , Cl, HCO ₃ +CO ₃)				1.16			0.91			1.44			1.11			1.21	
Sulfate					8.171			20.537			17.921			13.274			12.770
Chloride					6.779			7.658			7.264			8.940			7.008
Bicarbonate + Carbonate					85.050			71.805			74.815			77.786			80.222

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from October 1, 2013 to December 31, 2013

Site ID			Cross Gradient						Interior											
			MW-93 10/29/13			MW-95 10/24/13			MW-70 10/21/13			MW-77 10/25/13			MW-78 10/25/13			MW-100 10/17/13		
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	37.5	1.87126	47.7	20.1	1.00299	46.0	19.0	0.9481	49.8	21.0	1.0479	44.8	16.2	0.80838	45.7	25.1	1.2525	42.4
Magnesium	24.3	2	19.2	1.57992	40.3	10.7	0.88048	40.4	8.4	0.69039	36.3	11.4	0.93808	40.1	7.7	0.63361	35.8	14.7	1.20963	40.9
Potassium	39.1	1	1.6	0.04169	1.1	1.2	0.03044	1.4	1.6	0.03964	2.1	1.3	0.03427	1.5	2.2	0.05525	3.1	1.7	0.04399	1.5
Sodium	23.0	1	9.5	0.41323	10.5	5.9	0.25838	11.9	5.2	0.22445	11.8	7.3	0.31797	13.6	6.2	0.26969	15.3	8.7	0.37756	12.8
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	0.01	0.00036	0.0	1.71	0.06124	2.1
Manganese	54.9	2	0.29	0.01048	0.3	0.14	0.00502	0.2	0.00	3.6E-05	0.0	0.00	0.00015	0.0	0.00	3.6E-05	0.0	0.23	0.00848	0.3
Ammonia-N	14.0	1	0.05	0.00383	0.1	0.02	0.00156	0.1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0
Total Cations (meq/L)				3.9			2.2			1.9			2.3			1.8			3.0	
Anions																				
Alkalinity, Total			102			77			74			92			64			121		
Carbonate	60.0	2	0.1016	0.00339	0.1	0.15	0.005	0.2	0.1495	0.00498	0.3	0.0303	0.00101	0.0	0.0088	0.00029	0.0	0.0564	0.00188	0.1
Bicarbonate	61.0	1	124.23	2.0363	54.9	94.00	1.54077	76.3	89.49	1.4668	77.0	111.93	1.83471	84.1	78.31	1.28351	74.9	147.51	2.41775	82.9
Chloride	35.5	1	2.7	0.07503	2.0	5.0	0.14103	7.0	5.0	0.14188	7.4	4.4	0.12383	5.7	7.1	0.20055	11.7	3.1	0.08659	3.0
Nitrate-N	14.0	1	0.02	0.00121	0.0	0.01	0.00071	0.0	0.05	0.00348	0.2	0.83	0.05911	2.7	1.12	0.07996	4.7	0.01	0.00079	0.0
Sulfate	96.1	2	76.5	1.59279	42.9	16.0	0.33313	16.5	13.8	0.28733	15.1	7.8	0.16219	7.4	7.2	0.14908	8.7	19.7	0.41017	14.1
Total Anions (meq/L)				3.7			2.0			1.9			2.2			1.7			2.9	
Total Ions (meq/L)				7.6			4.2			3.8			4.5			3.5			5.9	
Cation/Anion Ratio				1.06			1.08			1.00			1.07			1.03			1.01	
Percent Difference				2.8			3.8			0.0			3.5			1.6			0.6	
Trilinear Diagram Data																				
sum (Ca, Mg, Na+K)				3.91			2.17			1.90			2.34			1.77			2.88	
Calcium					47.91			46.17			49.83			44.82			45.75			43.43
Magnesium					40.45			40.53			36.29			40.12			35.86			41.95
Sodium + Potassium					11.65			13.30			13.88			15.06			18.39			14.62
sum (SO ₄ , Cl, HCO ₃ +CO ₃)				3.71			2.02			1.90			2.12			1.63			2.92	
Sulfate					42.961			16.492			15.115			7.644			9.127			14.064
Chloride					2.024			6.982			7.463			5.836			12.278			2.969
Bicarbonate + Carbonate					55.015			76.526			77.422			86.520			78.596			82.967

Data Collected from October 1, 2013 to December 31, 2013

Site ID			Vertical to Facilites												Downgradient Northwest									
			MW-64 10/7/13			MW-66 10/16/13			MW-67 10/15/13			MW-68 10/18/13			MW-69 10/17/13			MW-72 10/10/13						
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	18.2	0.90818	39.3	18.7	0.93313	37.6	27.2	1.35729	43.8	24.1	1.20259	44.6	26.4	1.31737	48.2	25.1	1.2525	43.2				
Magnesium	24.3	2	13.1	1.07797	46.7	14.6	1.2014	48.4	16.3	1.34129	43.3	13.3	1.09443	40.6	12.5	1.02859	37.6	15.1	1.24254	42.9				
Potassium	39.1	1	1.4	0.03683	1.6	1.1	0.02839	1.1	1.4	0.03606	1.2	1.5	0.03709	1.4	1.5	0.03785	1.4	1.6	0.04169	1.4				
Sodium	23.0	1	6.4	0.27882	12.1	7.3	0.31666	12.8	8.1	0.35277	11.4	7.5	0.32754	12.1	7.1	0.30796	11.3	6.8	0.29491	10.2				
Iron	55.8	2	0.10	0.00342	0.1	0.01	0.00036	0.0	0.14	0.00509	0.2	0.73	0.02614	1.0	0.95	0.03399	1.2	1.59	0.05694	2.0				
Manganese	54.9	2	0.04	0.00153	0.1	0.00	3.6E-05	0.0	0.08	0.00296	0.1	0.24	0.00859	0.3	0.20	0.00735	0.3	0.28	0.01005	0.3				
Ammonia-N	14.0	1	0.03	0.00213	0.1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.02	0.00109	0.0	0.01	0.00071	0.0	0.01	0.00101	0.0				
Total Cations (meq/L)				2.3			99.9			2.5			3.1			2.7			2.7			2.9		
Anions																								
Alkalinity, Total			81			107			121			128			121			107						
Carbonate	60.0	2	0.0518	0.00173	0.1	0.1576	0.00525	0.2	0.1449	0.00483	0.1	0.1163	0.00388	0.1	0.2458	0.00819	0.3	0.0791	0.00264	0.1				
Bicarbonate	61.0	1	98.10	1.60803	73.5	130.22	2.13443	78.9	147.33	2.41481	72.1	155.92	2.55574	86.0	147.12	2.41144	85.9	130.38	2.13704	70.1				
Chloride	35.5	1	3.7	0.10521	4.8	7.5	0.21098	7.8	4.7	0.13144	3.9	2.7	0.07729	2.6	4.2	0.11706	4.2	4.7	0.13201	4.3				
Nitrate-N	14.0	1	0.09	0.00612	0.3	0.76	0.05419	2.0	0.43	0.03063	0.9	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0				
Sulfate	96.1	2	22.4	0.46639	21.3	14.5	0.3019	11.2	36.8	0.76621	22.9	16.1	0.33522	11.3	13.0	0.27067	9.6	37.2	0.77454	25.4				
Total Anions (meq/L)				2.2			100.0			2.7			3.0			2.8			3.0					
Total Ions (meq/L)				4.5			5.2			6.4			5.7			5.5			5.9					
Cation/Anion Ratio				1.06			0.92			0.92			0.91			0.97			0.95					
Percent Difference				2.7			-4.4			-3.9			-4.9			-1.3			-2.5					
Trilinear Diagram Data																								
sum (Ca, Mg, Na+K)				2.30			2.48			3.09			2.66			2.69			2.83					
Calcium					39.46			37.63			43.96			45.18			48.94			44.23				
Magnesium					46.83			48.45			43.44			41.12			38.21			43.88				
Sodium + Potassium					13.71			13.92			12.59			13.70			12.85			11.89				
					100.0																			
sum (SO ₄ , Cl, HCO ₃ +CO ₃)				2.18			2.65			3.32			2.97			2.81			3.05					
Sulfate					21.381			11.382			23.097			11.279			9.641			25.426				
Chloride					4.823			7.954			3.962			2.600			4.170			4.333				
Bicarbonate + Carbonate					73.796			80.665			72.940			86.121			86.189			70.240				
					100.0																			

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from October 1, 2013 to December 31, 2013

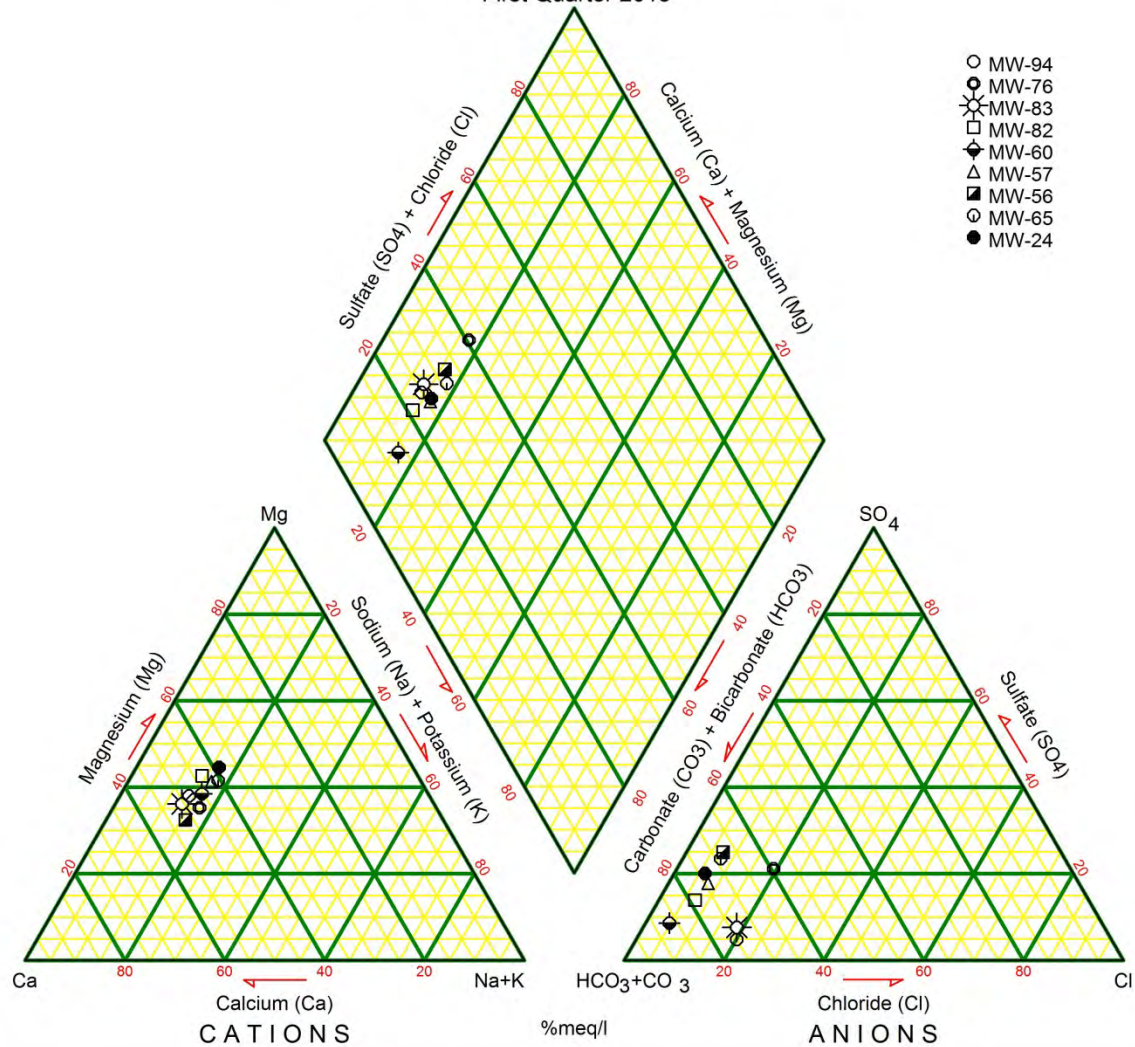
Site ID			Downgradient																	
			MW-74 10/24/13			MW-75 10/24/13			MW-80 10/31/13			MW-85 10/29/13			MW-86 10/29/13			MW-87 10/22/13		
Cations	MW	n	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
Calcium	40.1	2	41.4	2.06587	39.6	23.9	1.19261	38.2	28.4	1.41717	46.7	24.4	1.21756	42.9	13.5	0.67365	39.0	38.8	1.93613	47.5
Magnesium	24.3	2	31.5	2.59206	49.7	17.7	1.45649	46.7	14.4	1.18494	39.1	15.0	1.23431	43.5	9.0	0.74306	43.0	19.7	1.62107	39.8
Potassium	39.1	1	2.0	0.05192	1.0	1.8	0.04501	1.4	1.6	0.04067	1.3	1.5	0.03709	1.3	1.2	0.02992	1.7	2.1	0.05448	1.3
Sodium	23.0	1	11.6	0.50457	9.7	8.2	0.35799	11.5	7.6	0.32884	10.8	8.0	0.34755	12.2	6.2	0.26751	15.5	7.1	0.31057	7.6
Iron	55.8	2	0.01	0.00036	0.0	1.74	0.06231	2.0	1.44	0.05157	1.7	0.01	0.00036	0.0	0.35	0.01236	0.7	3.88	0.13895	3.4
Manganese	54.9	2	0.00	3.6E-05	0.0	0.16	0.00579	0.2	0.27	0.00976	0.3	0.00	3.6E-05	0.0	0.01	0.00032	0.0	0.34	0.01223	0.3
Ammonia-N	14.0	1	0.01	0.00071	0.0	0.01	0.00071	0.0	0.01	0.00071	0.0	0.02	0.00107	0.0	0.01	0.00071	0.0	0.01	0.00104	0.0
Total Cations (meq/L)			5.2			3.1			3.0			2.8			1.7			4.1		
Anions																				
Alkalinity, Total			198			89			83			84			59			81		
Carbonate	60.0	2	0.106	0.00353	0.1	0.0398	0.00133	0.0	0.0704	0.00235	0.1	0.0392	0.00131	0.1	0.0168	0.00056	0.0	0.0435	0.00145	0.0
Bicarbonate	61.0	1	241.34	3.95587	77.4	108.87	1.7844	60.7	101.12	1.6574	60.7	102.40	1.67844	64.5	71.34	1.16926	70.0	98.98	1.62231	35.7
Chloride	35.5	1	22.9	0.64593	12.6	8.1	0.22819	7.8	5.5	0.15626	5.7	7.5	0.21268	8.2	4.8	0.13624	8.2	5.9	0.16529	3.6
Nitrate-N	14.0	1	0.45	0.03177	0.6	0.01	0.00071	0.0	0.02	0.00121	0.0	0.20	0.01421	0.5	0.32	0.02299	1.4	0.01	0.00071	0.0
Sulfate	96.1	2	22.9	0.4768	9.3	44.5	0.92653	31.5	43.8	0.91195	33.4	33.5	0.6975	26.8	16.4	0.34146	20.4	132.0	2.74835	60.6
Total Anions (meq/L)			5.1			2.9			2.7			2.6			1.7			4.5		
Total Ions (meq/L)			10.3			6.1			5.8			5.4			3.4			8.6		
Cation/Anion Ratio			1.02			1.06			1.11			1.09			1.03			0.90		
Percent Difference			1.0			3.0			5.3			4.3			1.7			-5.4		
Trilinear Diagram Data																				
sum (Ca, Mg, Na+K)			5.21			3.05			2.97			2.84			1.71			3.92		
Calcium			39.62			39.08			47.69			42.92			39.30			49.36		
Magnesium			49.71			47.72			39.88			43.52			43.35			41.33		
Sodium + Potassium			10.67			13.20			12.43			13.56			17.35			9.31		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			5.08			2.94			2.73			2.59			1.65			4.54		
Sulfate			9.382			31.510			33.430			26.931			20.726			60.571		
Chloride			12.710			7.760			5.728			8.212			8.269			3.643		
Bicarbonate + Carbonate			77.908			60.730			60.842			64.857			71.005			35.786		

Ion Balance Calculations
Cedar Hills Landfill Regional Aquifer Groundwater Monitoring Wells

Data Collected from October 1, 2013 to December 31, 2013

Site ID			Downgradient of North End Facilities														
			MW-88 10/28/13			MW-89 11/28/13			MW-90 10/18/13			MW-91 10/28/13			MW-43 10/17/13		
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	8.9	0.44561	35.1	13.7	0.68363	35.7	15.5	0.77345	42.0	22.9	1.14271	40.8	11.9	0.59381	37.8
Magnesium	24.3	2	6.7	0.55297	43.6	9.8	0.80642	42.2	9.0	0.74388	40.4	14.5	1.19317	42.6	8.2	0.67723	43.1
Potassium	39.1	1	0.8	0.02156	1.7	1.5	0.03734	2.0	1.2	0.03095	1.7	1.7	0.04374	1.6	1.2	0.03044	1.9
Sodium	23.0	1	5.7	0.24707	19.5	8.0	0.34711	18.1	5.7	0.24968	13.6	7.4	0.32058	11.4	5.6	0.24489	15.6
Iron	55.8	2	0.01	0.00036	0.0	0.79	0.02811	1.5	0.95	0.03391	1.8	2.36	0.08452	3.0	0.41	0.01472	0.9
Manganese	54.9	2	0.00	3.6E-05	0.0	0.25	0.00925	0.5	0.24	0.0087	0.5	0.36	0.01303	0.5	0.20	0.00724	0.5
Ammonia-N	14.0	1	0.01	0.00071	0.1	0.02	0.00131	0.1	0.01	0.00089	0.0	0.04	0.00263	0.1	0.02	0.00154	0.1
Total Cations (meq/L)			1.3			1.9			1.8			2.8			1.6		
Anions																	
Alkalinity, Total			47			68			65			81			64		
Carbonate	60.0	2	0.07384	0.00246	0.2	0.10292	0.00343	0.2	0.08665	0.00289	0.1	0.03068	0.00102	0.0	0.10818	0.00361	0.2
Bicarbonate	61.0	1	56.95	0.9334	79.3	83.12	1.36236	75.6	78.51	1.28692	66.5	98.64	1.61673	60.2	77.86	1.2762	76.8
Chloride	35.5	1	2.2	0.06262	5.3	4.0	0.11395	6.3	4.0	0.11283	5.8	8.0	0.22509	8.4	3.8	0.10775	6.5
Nitrate-N	14.0	1	0.61	0.04362	3.7	0.01	0.00079	0.0	0.01	0.00086	0.0	0.03	0.00214	0.1	0.01	0.00071	0.0
Sulfate	96.1	2	6.5	0.13429	11.4	15.5	0.32272	17.9	25.5	0.53093	27.4	40.4	0.84116	31.3	13.1	0.27275	16.4
Total Anions (meq/L)			1.2			1.8			1.9			2.7			1.7		
Total Ions (meq/L)			2.4			3.7			3.8			5.5			3.2		
Cation/Anion Ratio			1.08			1.06			0.95			1.04			0.95		
Percent Difference			3.8			3.0			-2.5			2.1			-2.8		
Trilinear Diagram Data																	
sum (Ca, Mg, Na+K)			1.27			1.87			1.80			2.70			1.55		
Calcium						35.16						42.32			38.40		
Magnesium						43.64						41.37			44.19		
Sodium + Potassium						21.20						15.61			17.80		
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.13			1.80			1.93			2.68			1.66		
Sulfate						11.855			17.904			27.459			31.340		
Chloride						5.528			6.322			5.835			8.386		
Bicarbonate + Carbonate						82.617			75.773			66.706			60.274		

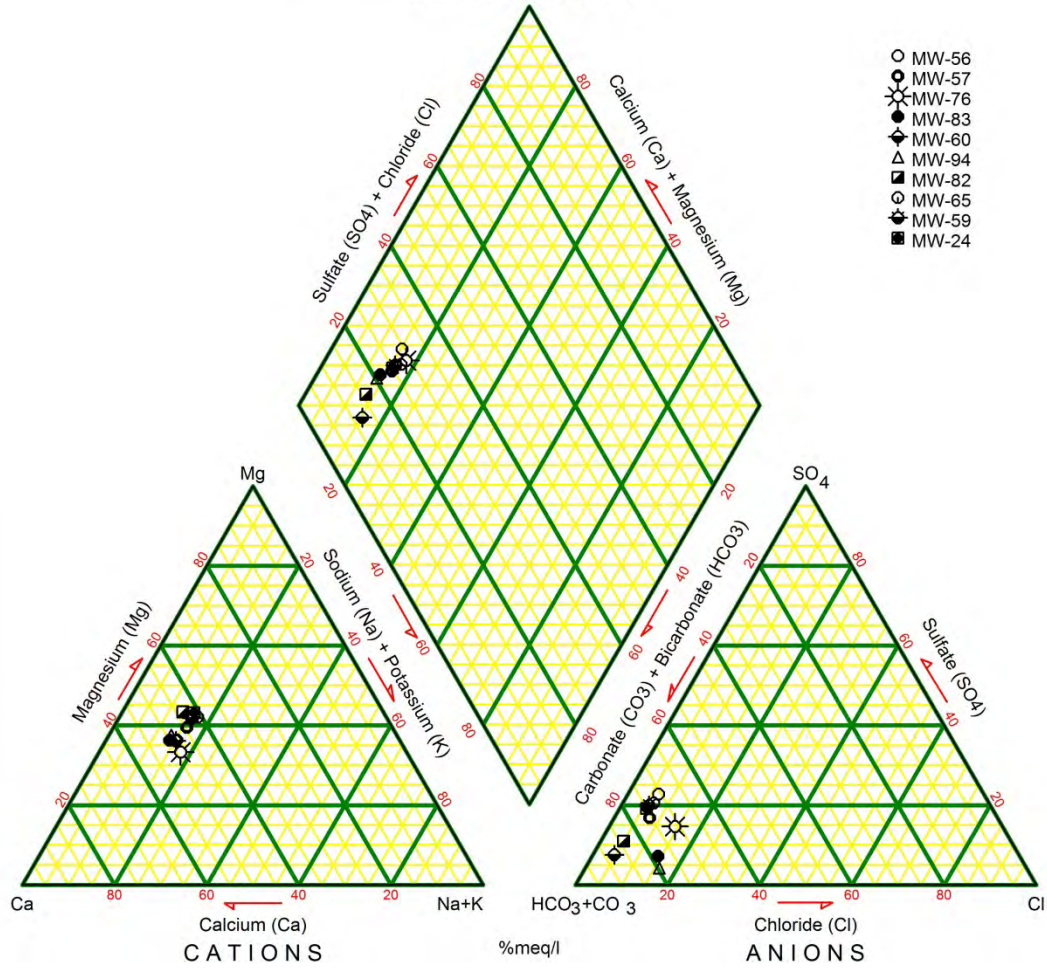
Cedar Hills Regional Landfill
Figure 2. Regional Aquifer South Upgradient Wells
First Quarter 2013



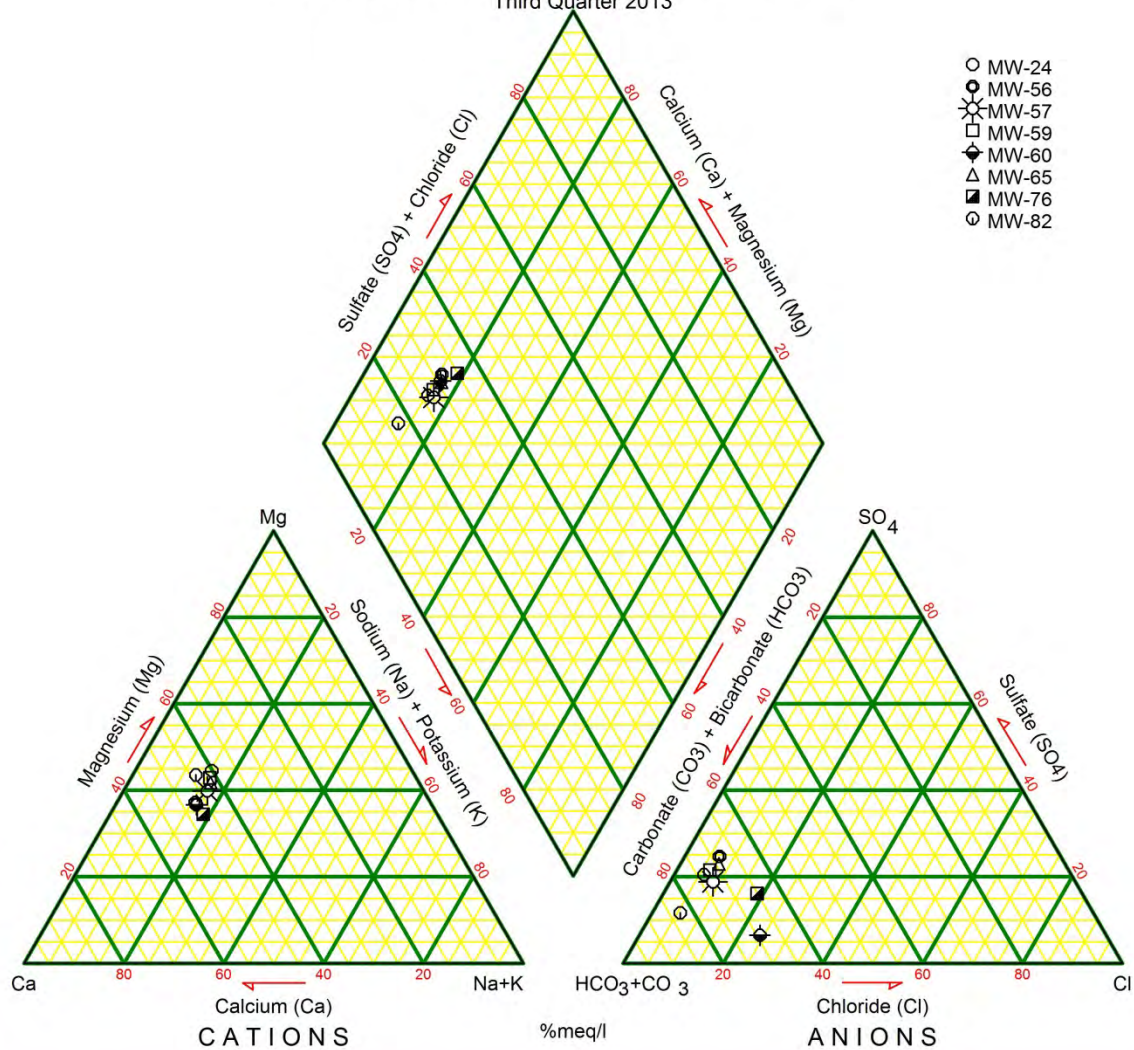
Cedar Hills Regional Landfill

Figure 2. Regional Aquifer Southern Upgradient Wells

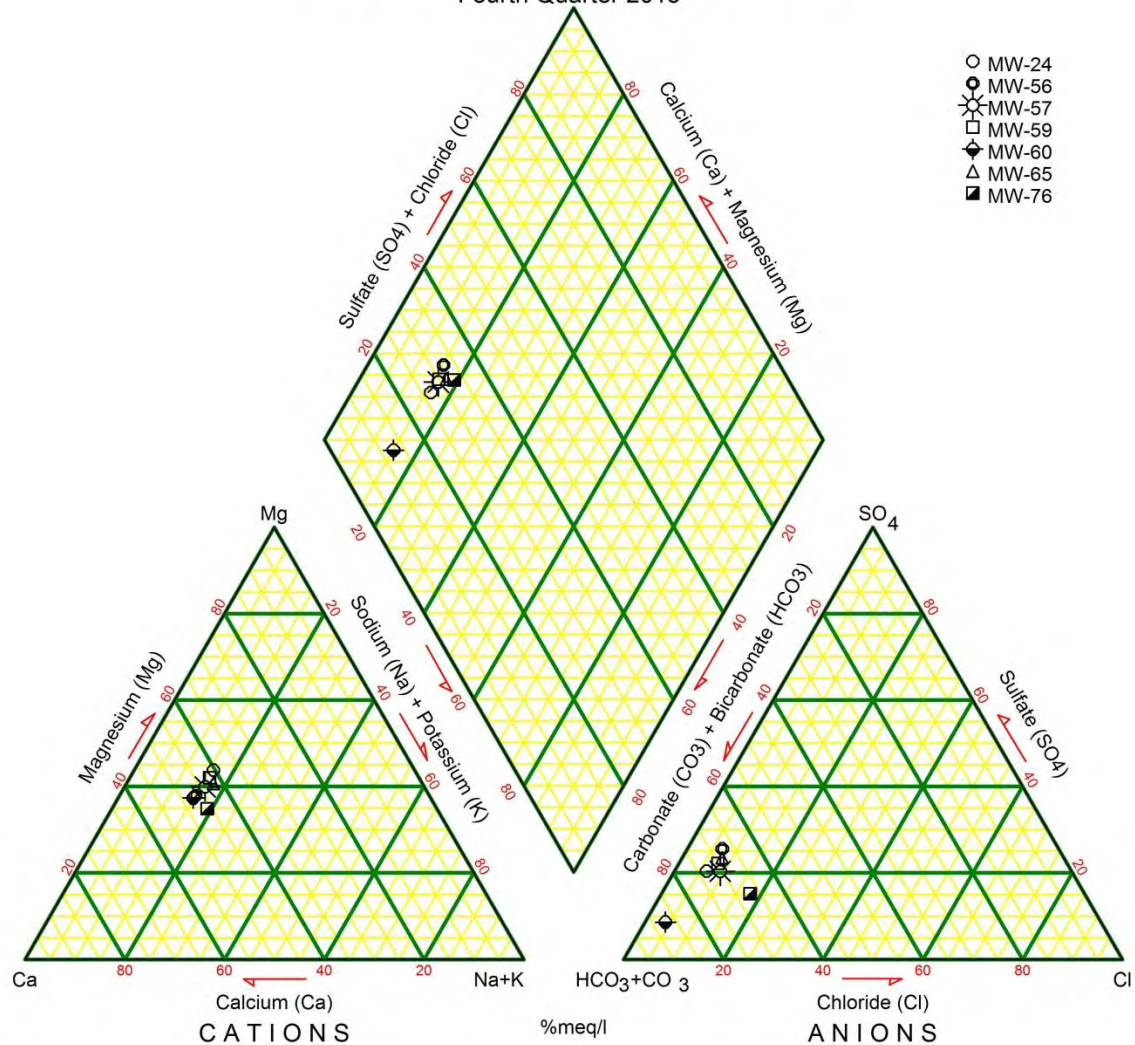
Second Quarter 2013



Cedar Hills Regional Landfill
Figure 2. Regional Aquifer South Upgradient Wells
Third Quarter 2013

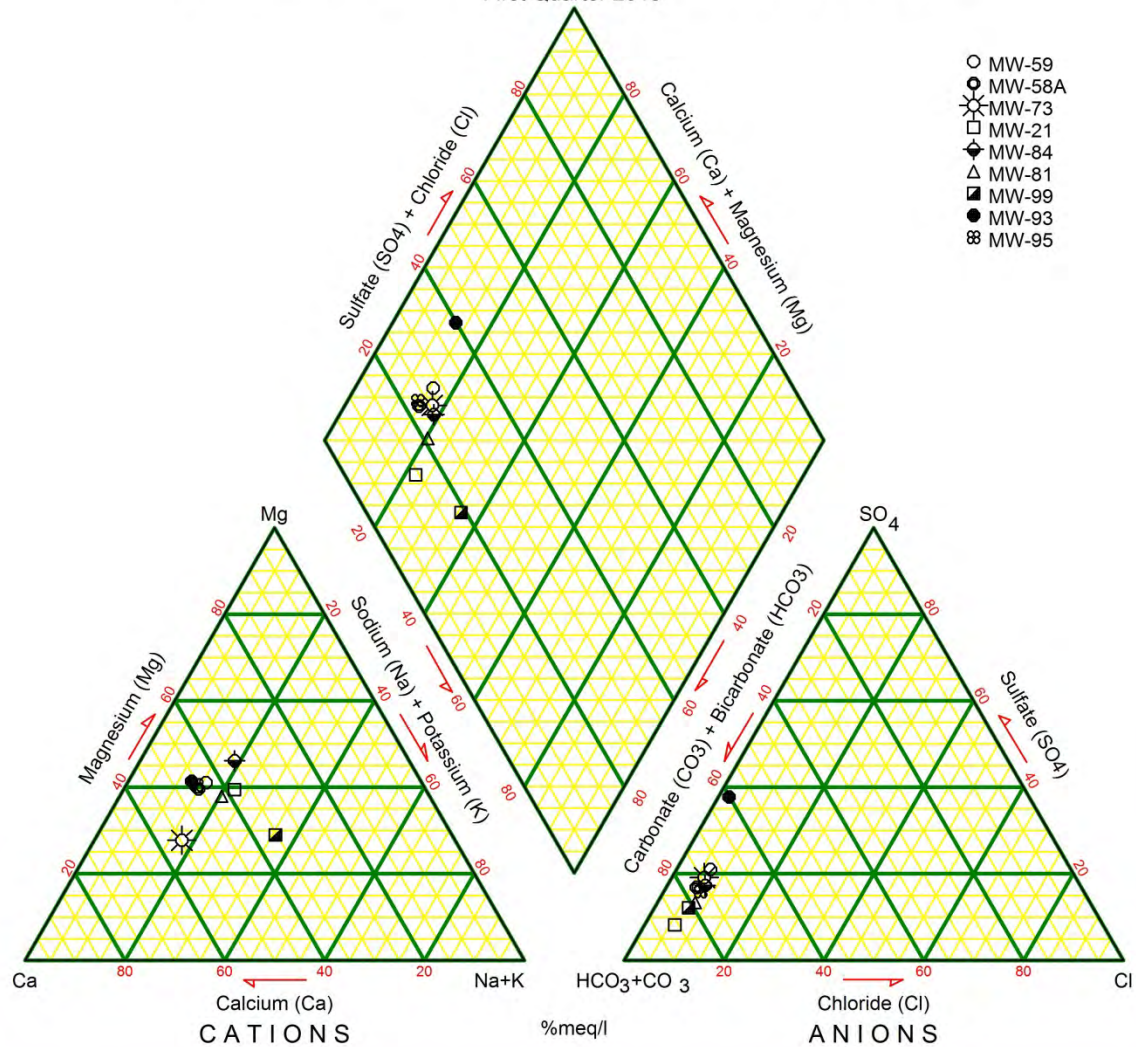


Cedar Hills Regional Landfill
 Figure 2. Regional Aquifer South Upgradient Wells
 Fourth Quarter 2013

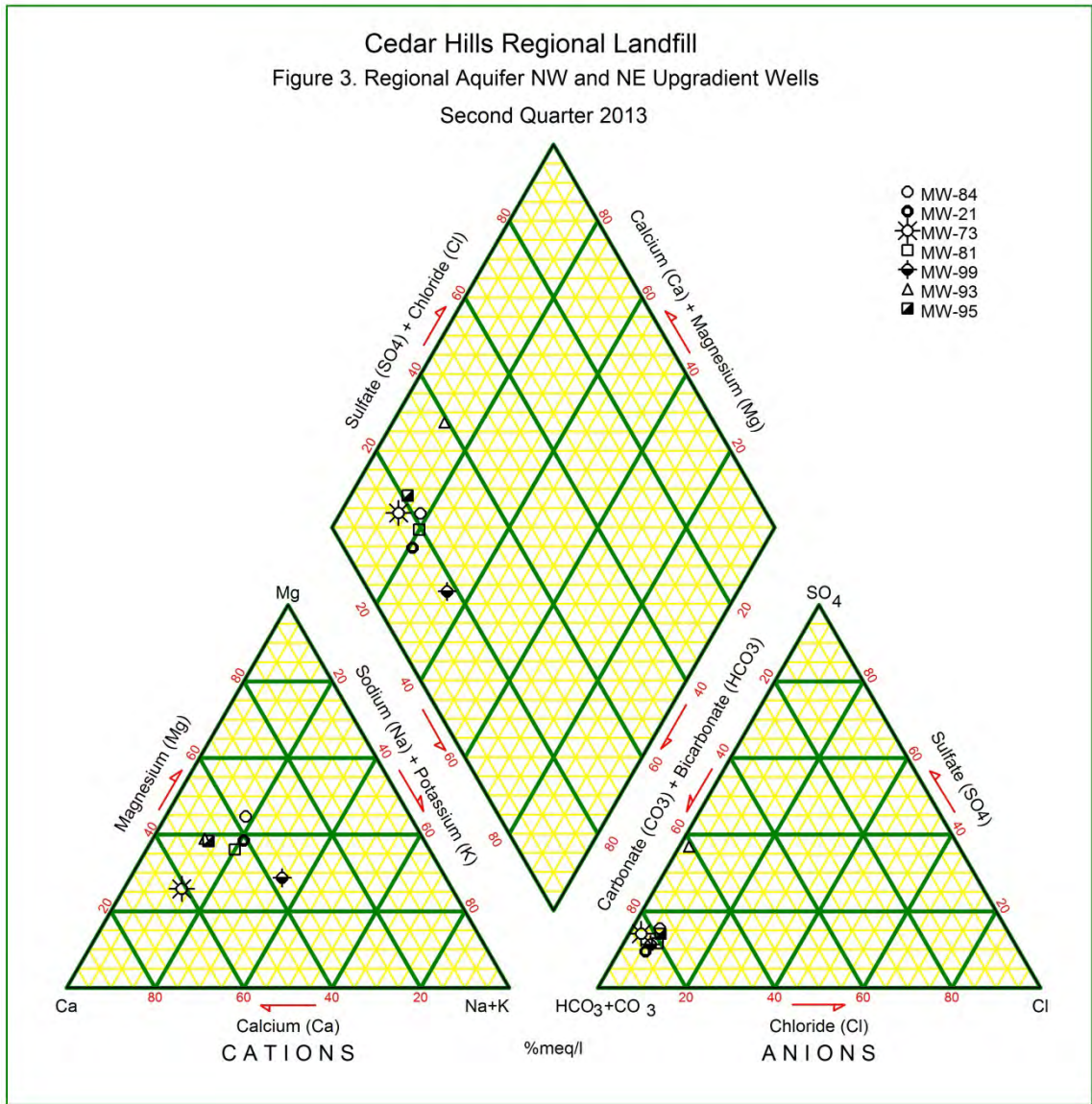


Cedar Hills Regional Landfill

Figure 3. Regional Aquifer S NE NW Upgradient and Crossgradient Wells
First Quarter 2013



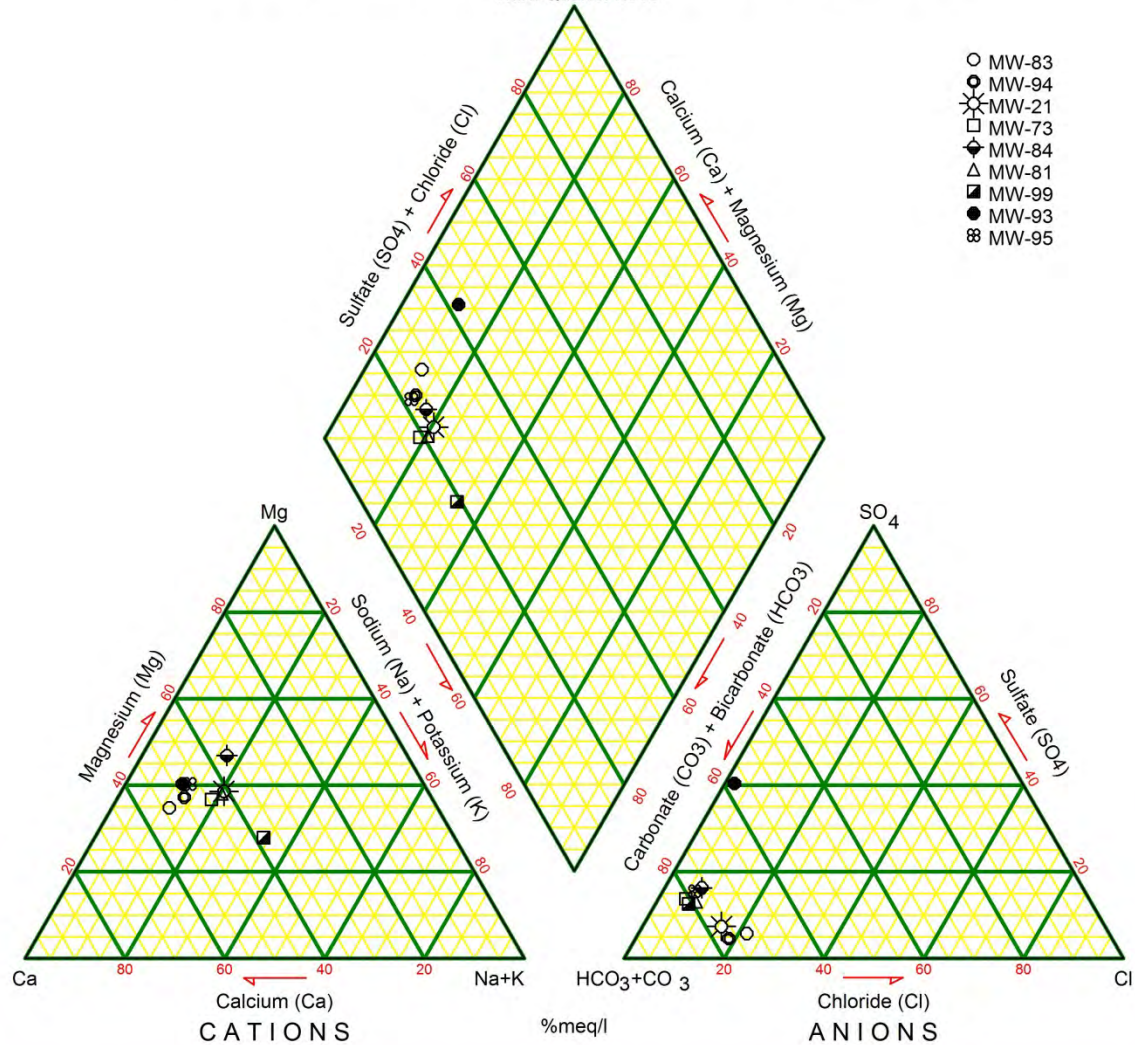
Cedar Hills Regional Landfill
 Figure 3. Regional Aquifer NW and NE Upgradient Wells
 Second Quarter 2013



Cedar Hills Regional Landfill

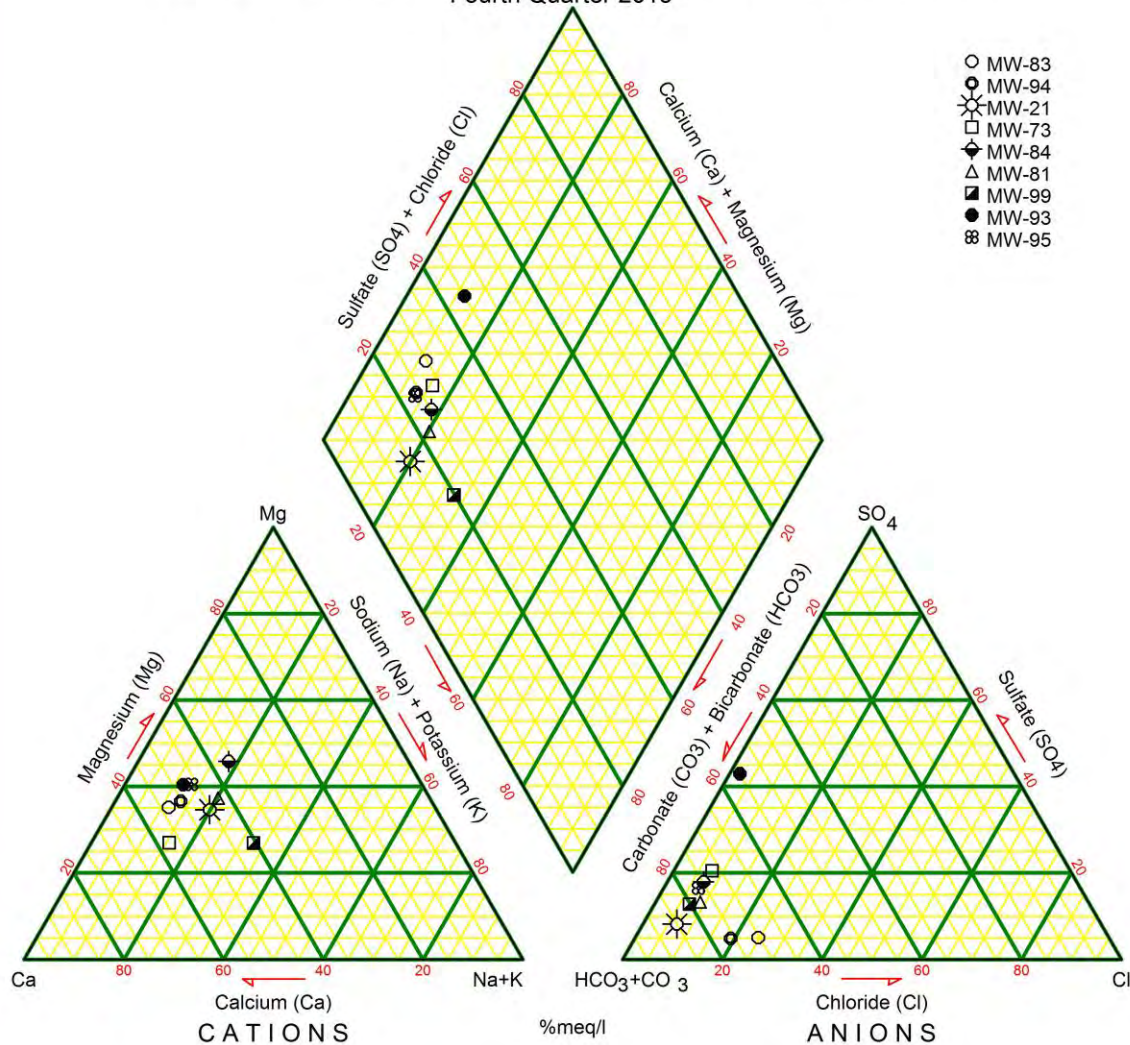
Figure 3. Regional Aquifer S NE NW Upgradient and Crossgradient Wells

Third Quarter 2013



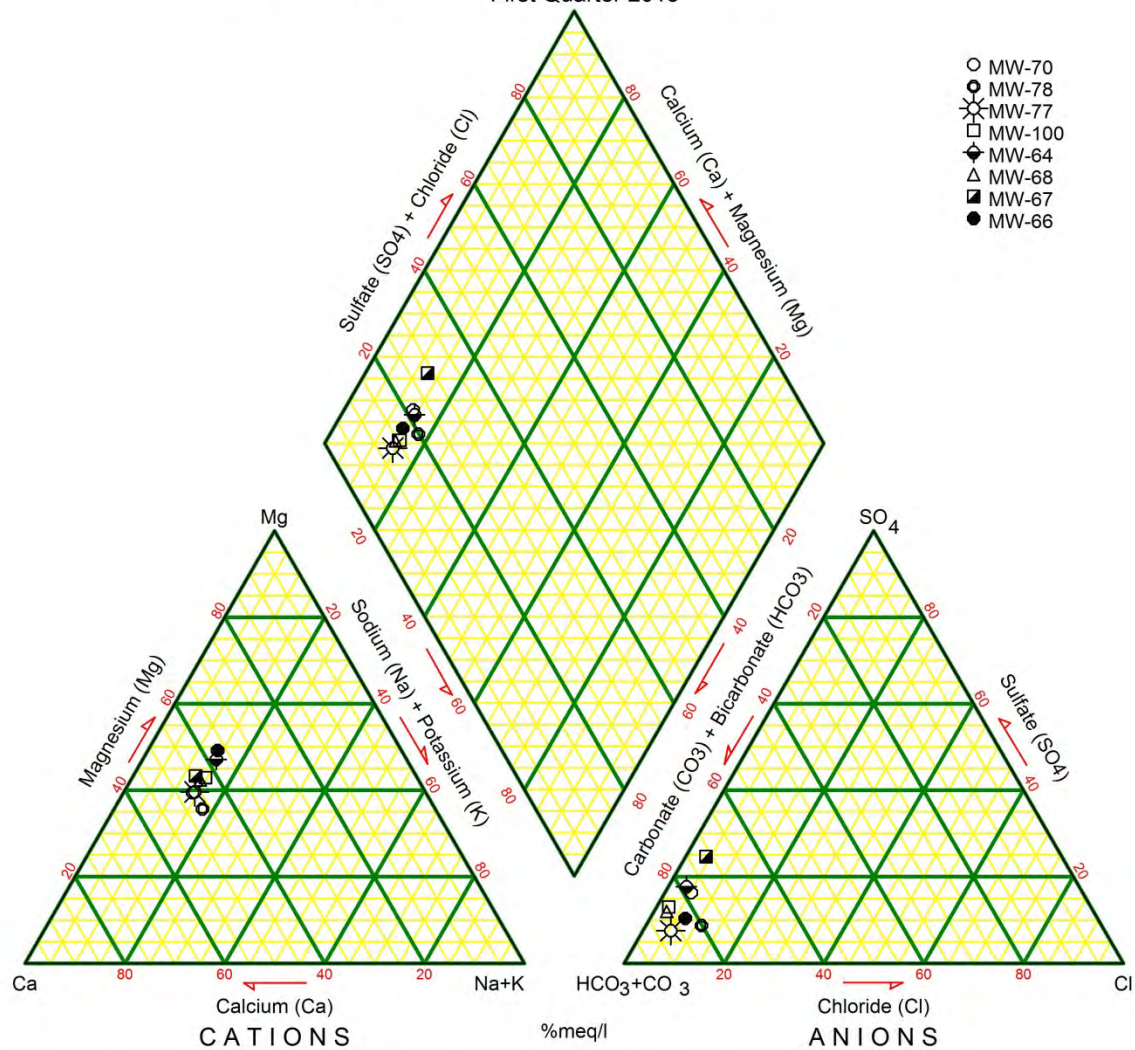
Cedar Hills Regional Landfill

Figure 3. Regional Aquifer S NE NW Upgradient and Crossgradient Wells
Fourth Quarter 2013



Cedar Hills Regional Landfill

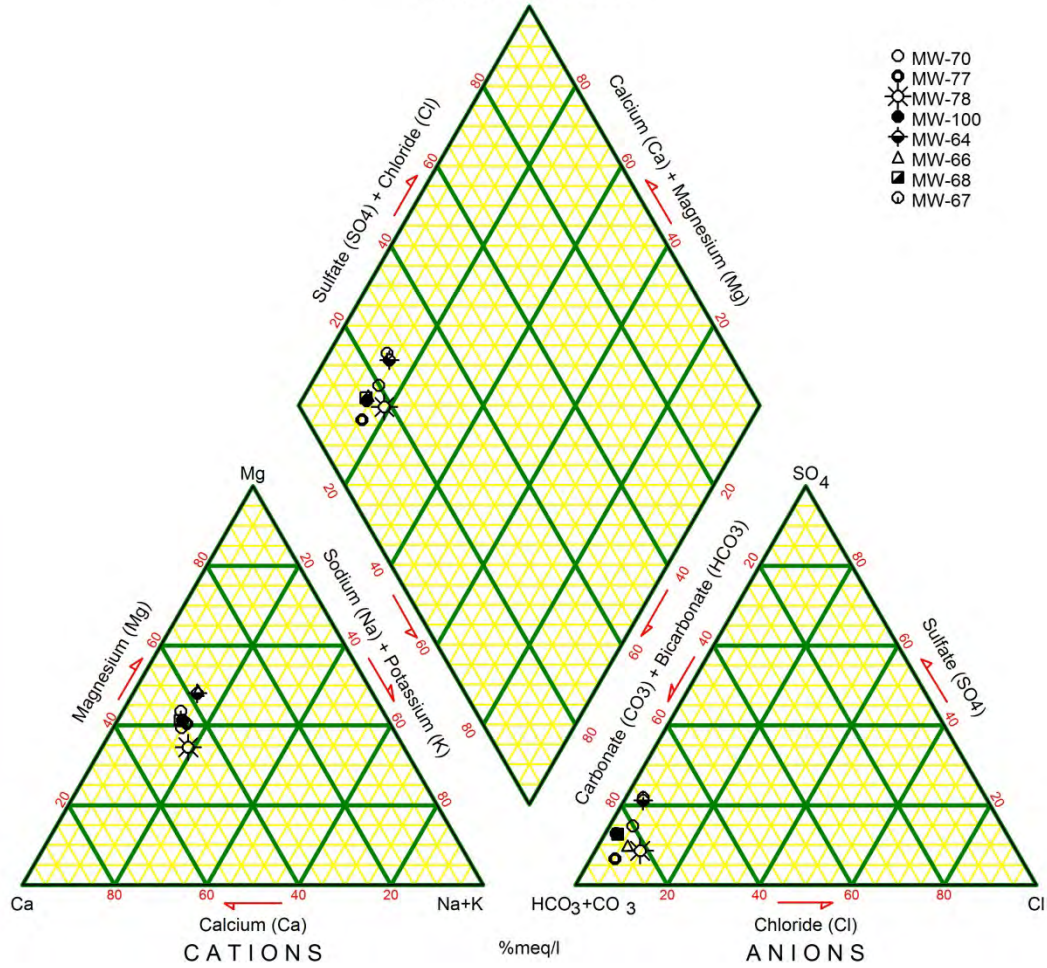
Figure 4. Regional Aquifer Interior and Vertical to Facilities Wells
First Quarter 2013



Cedar Hills Regional Landfill

Figure 4. Regional Aquifer Interior and Vertical to Facilities

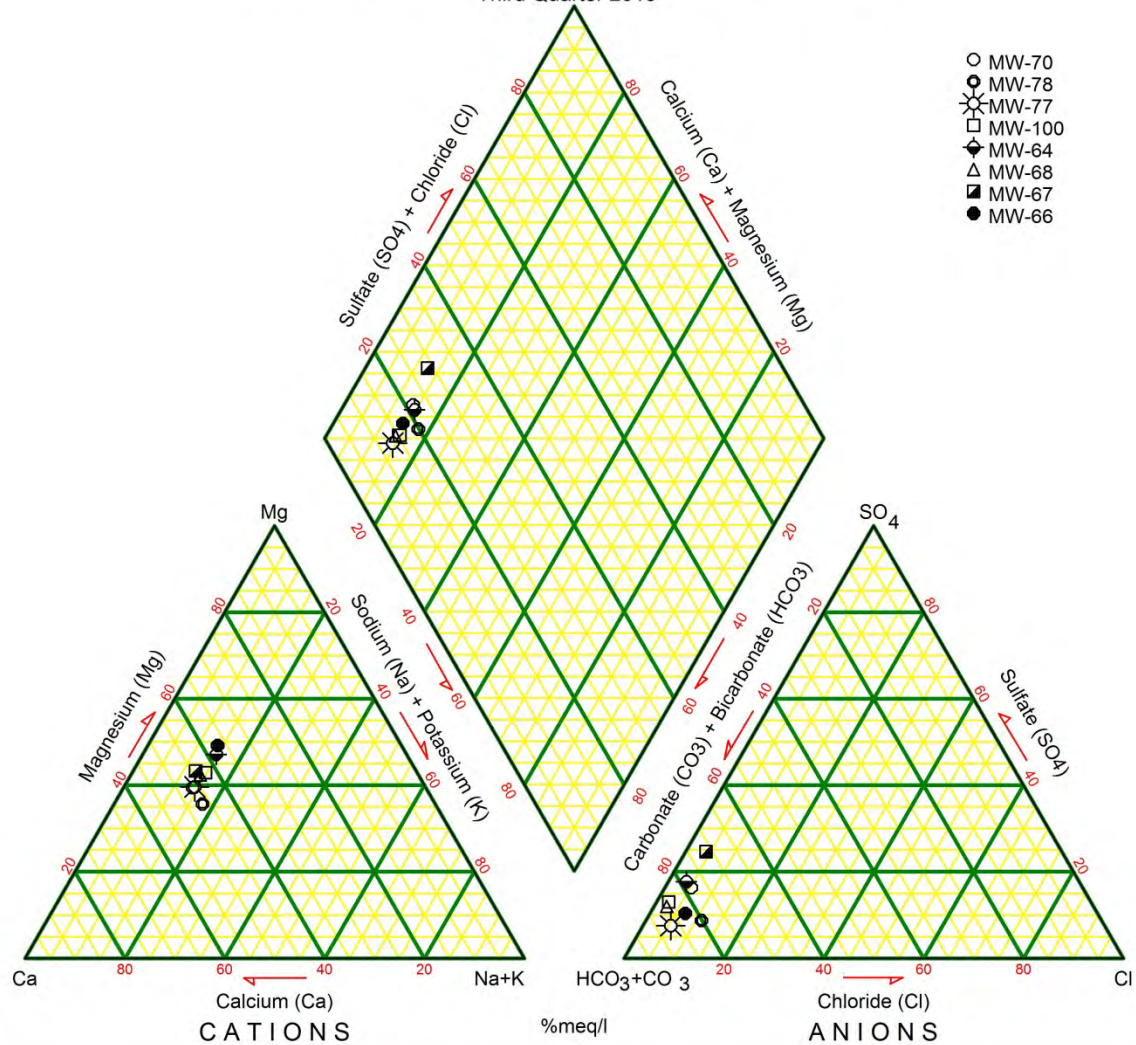
Second Quarter 2013



Cedar Hills Regional Landfill

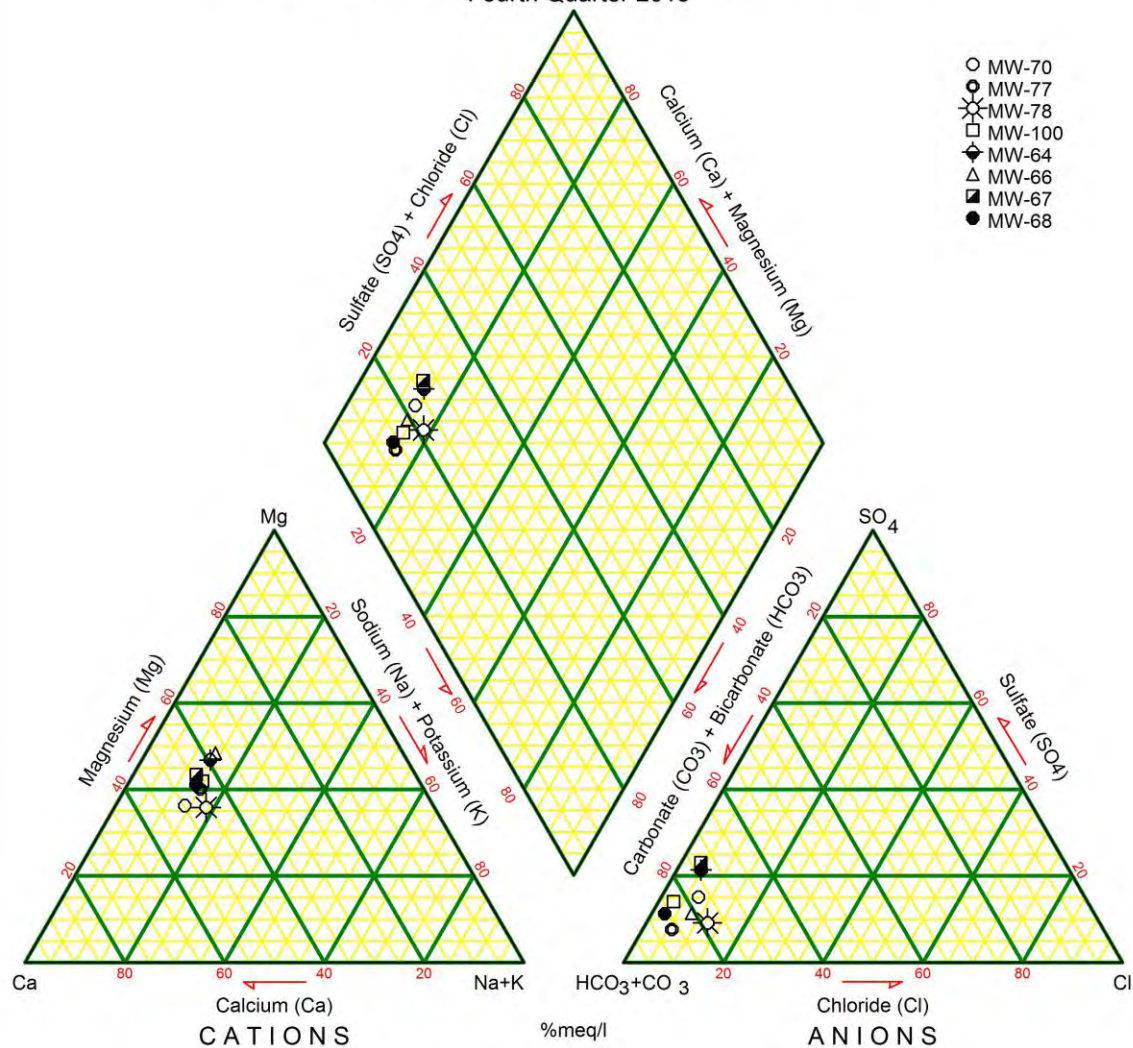
Figure 4. Regional Aquifer Interior and Vertical to Facilities

Third Quarter 2013

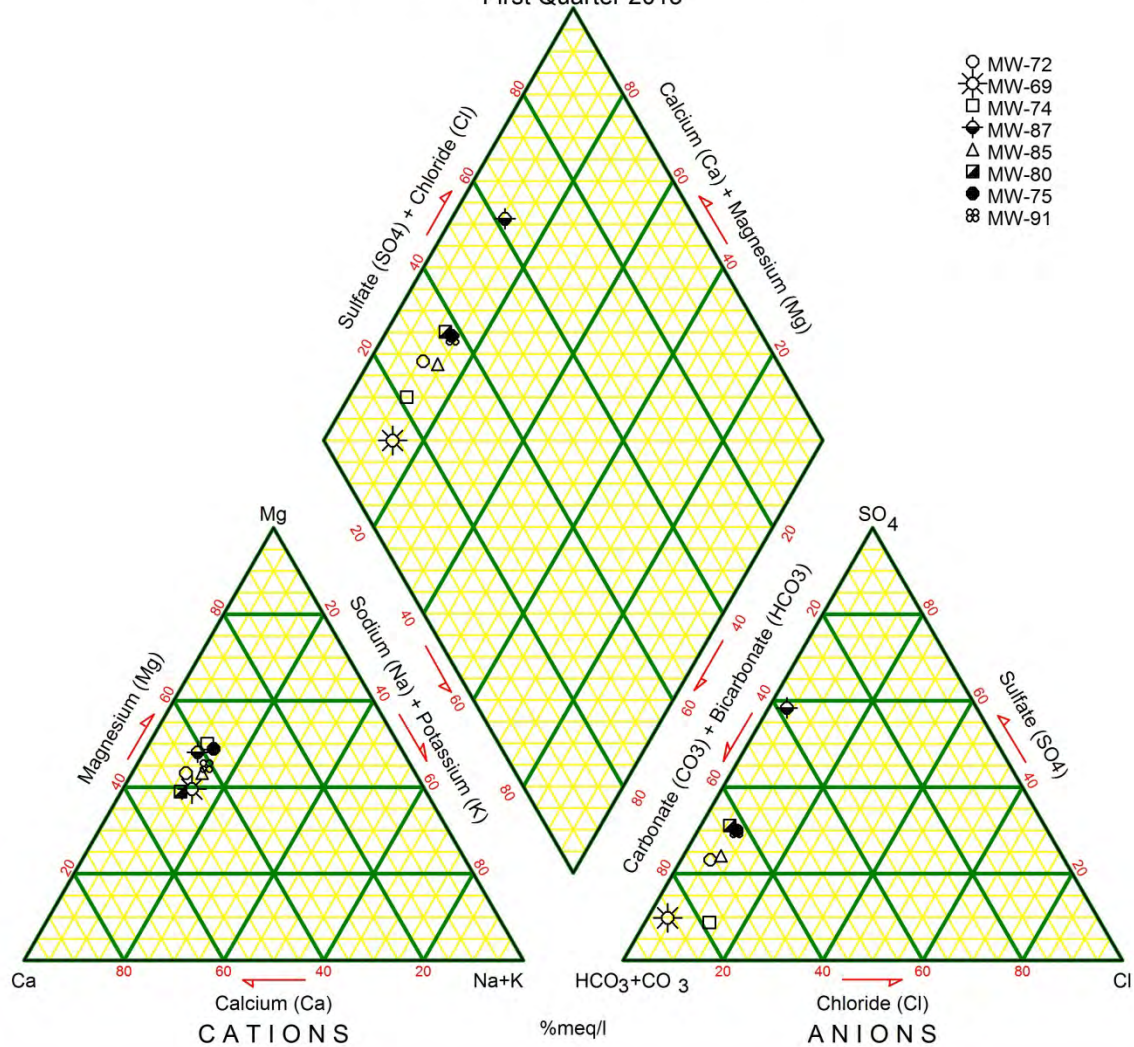


Cedar Hills Regional Landfill

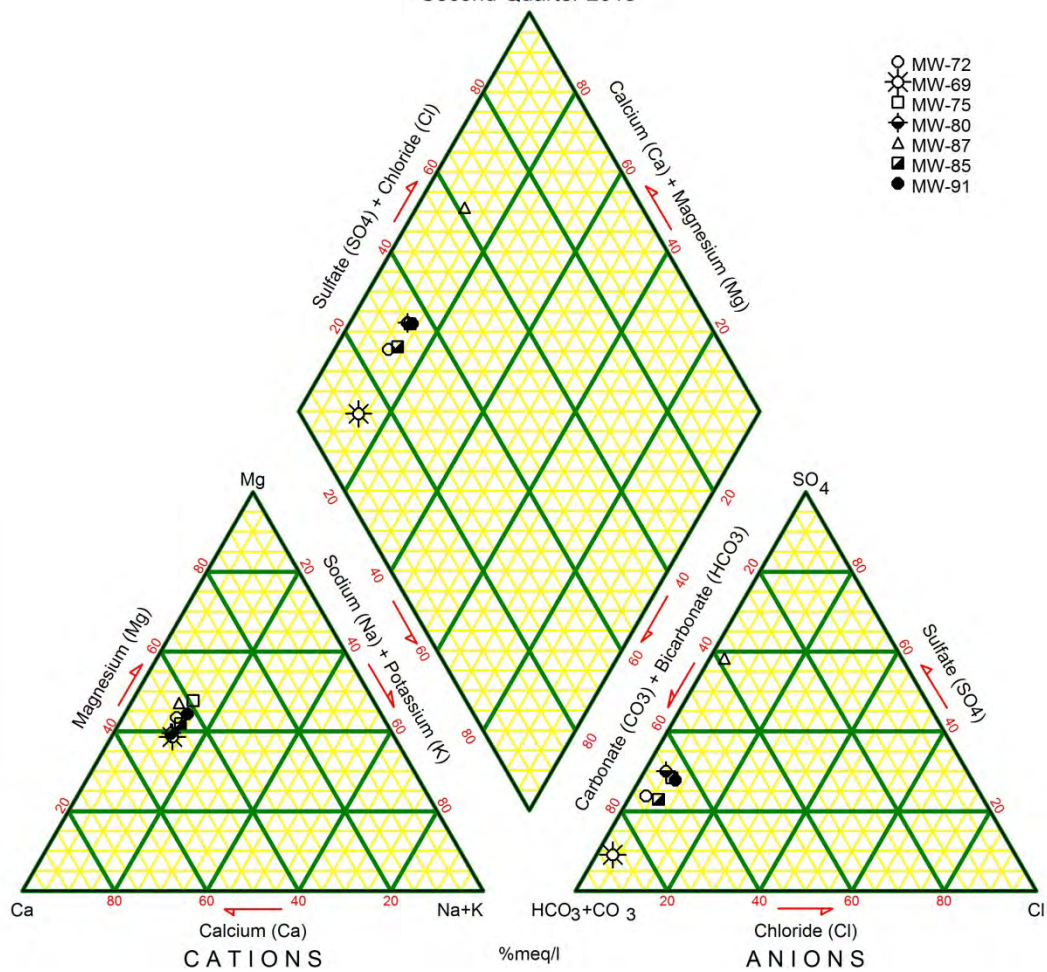
Figure 4. Regional Aquifer Wells Interior and Vertical to Facilities
Fourth Quarter 2013



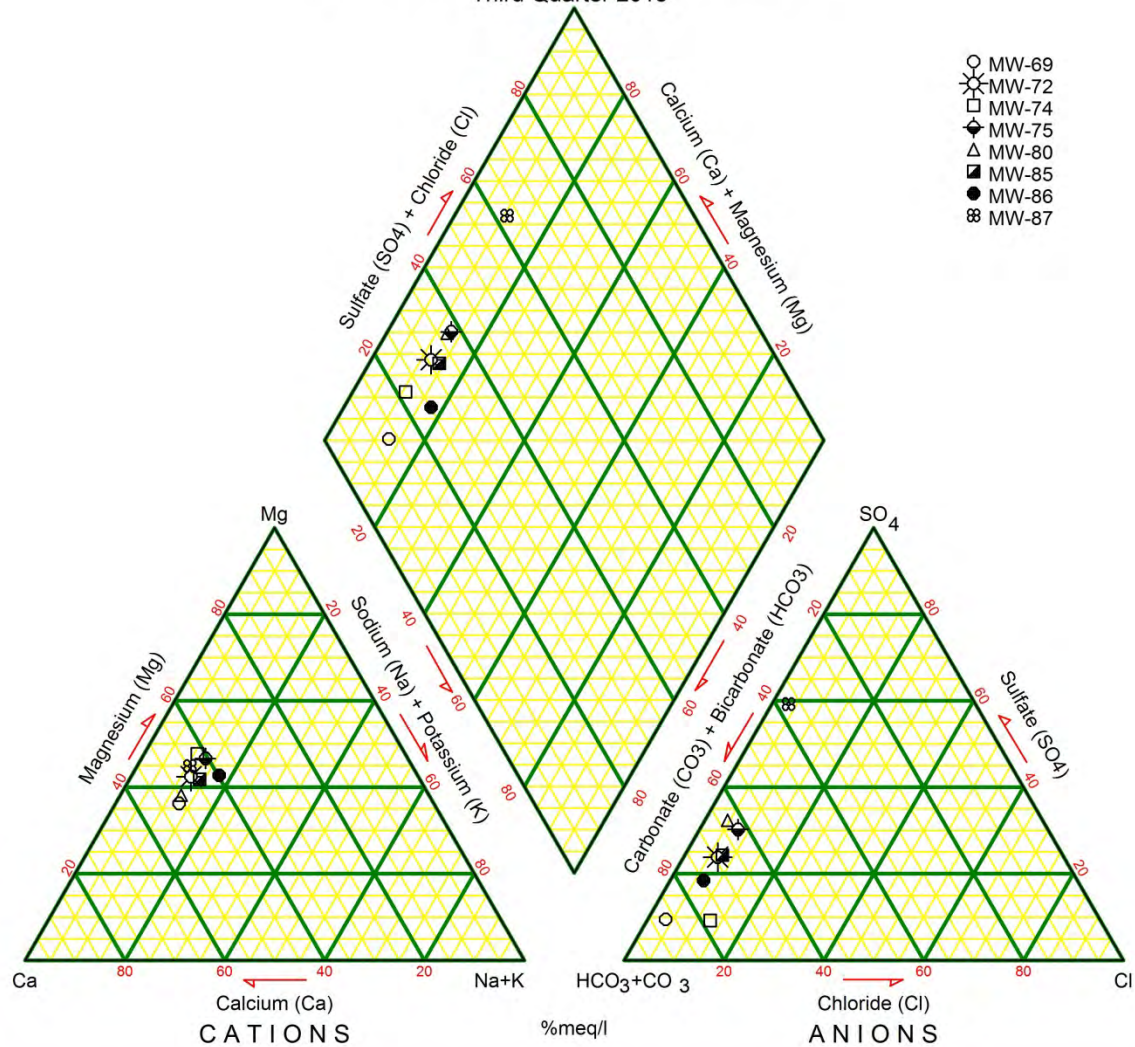
Cedar Hills Regional Landfill
 Figure 5. Regional Aquifer Downgradient Wells
 First Quarter 2013



Cedar Hills Regional Landfill
 Figure 5. Regional Aquifer Dongradient Wells
 Second Quarter 2013

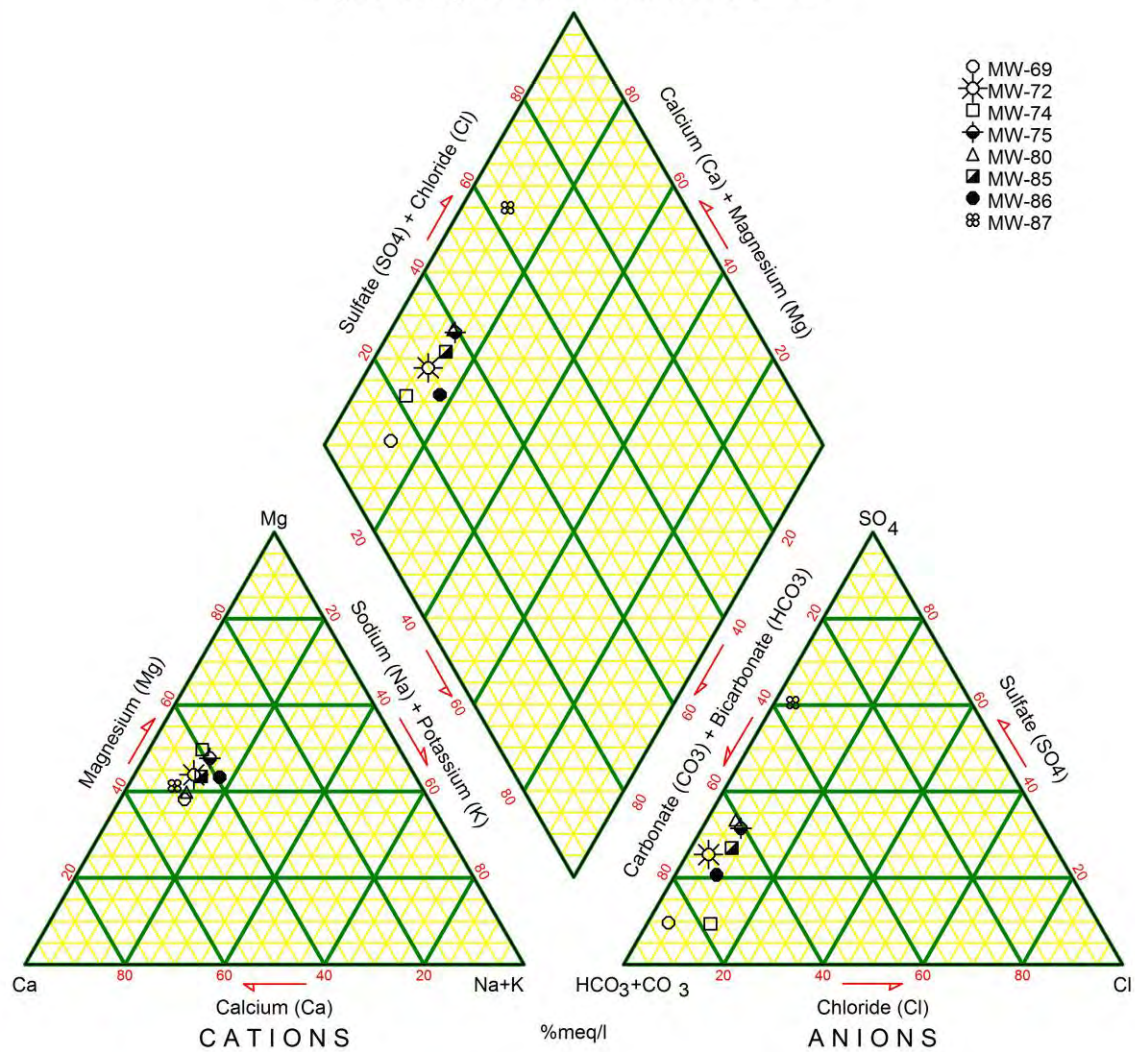


Cedar Hills Regional Landfill
 Figure 5. Regional Aquifer Downgradient Wells
 Third Quarter 2013



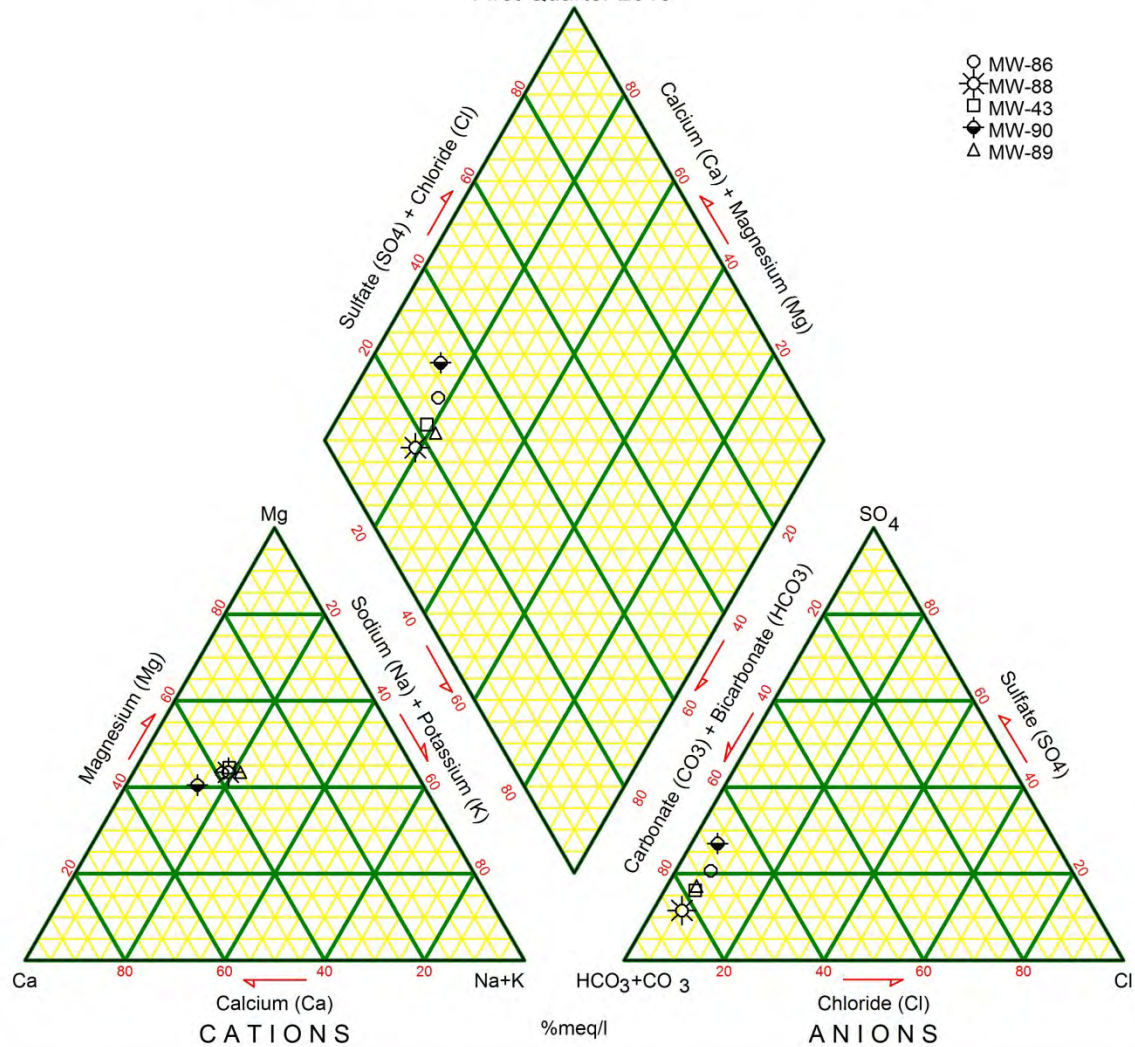
Cedar Hills Regional Landfill

Figure 5. Regional Aquifer Downgradient Wells



Cedar Hills Regional Landfill

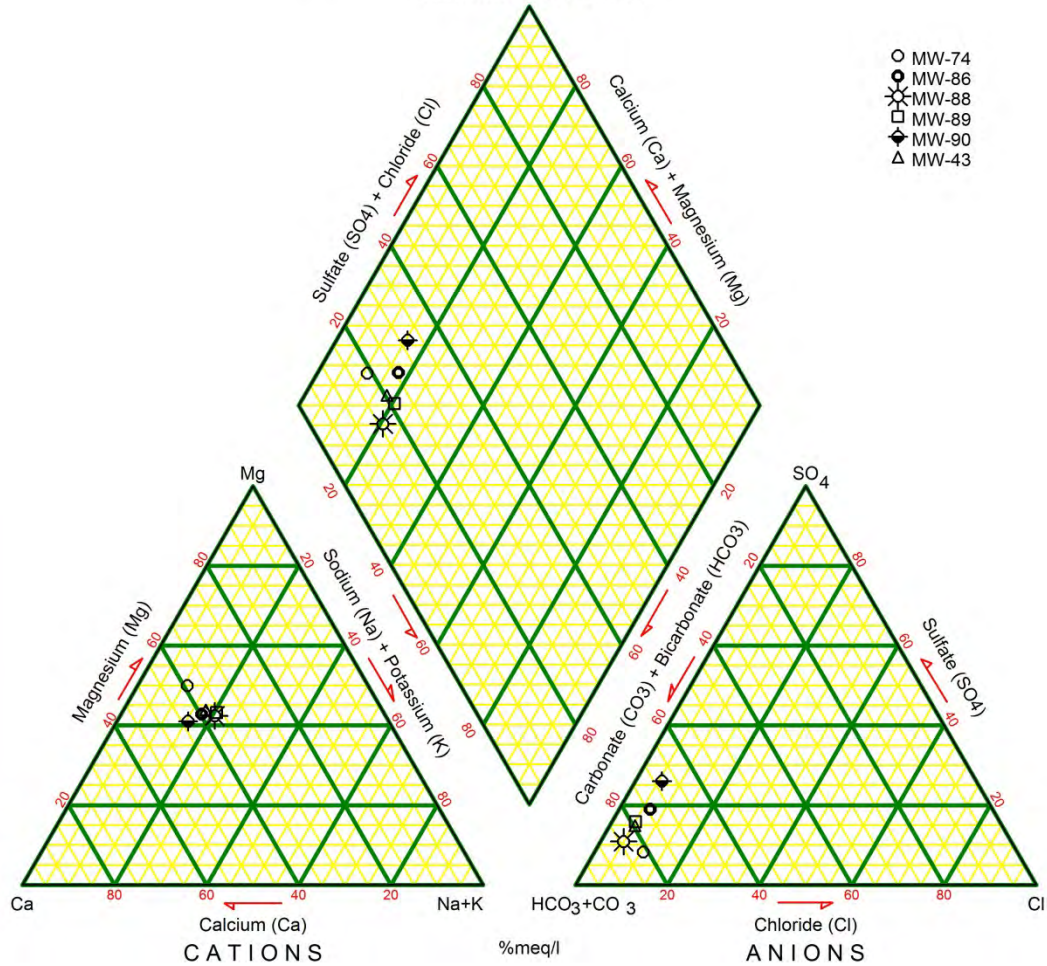
Figure 6. Regional Aquifer Wells Downgradient of North End Facilities
First Quarter 2013



Cedar Hills Regional Landfill

Figure 6. Regional Aquifer Downgradient Wells

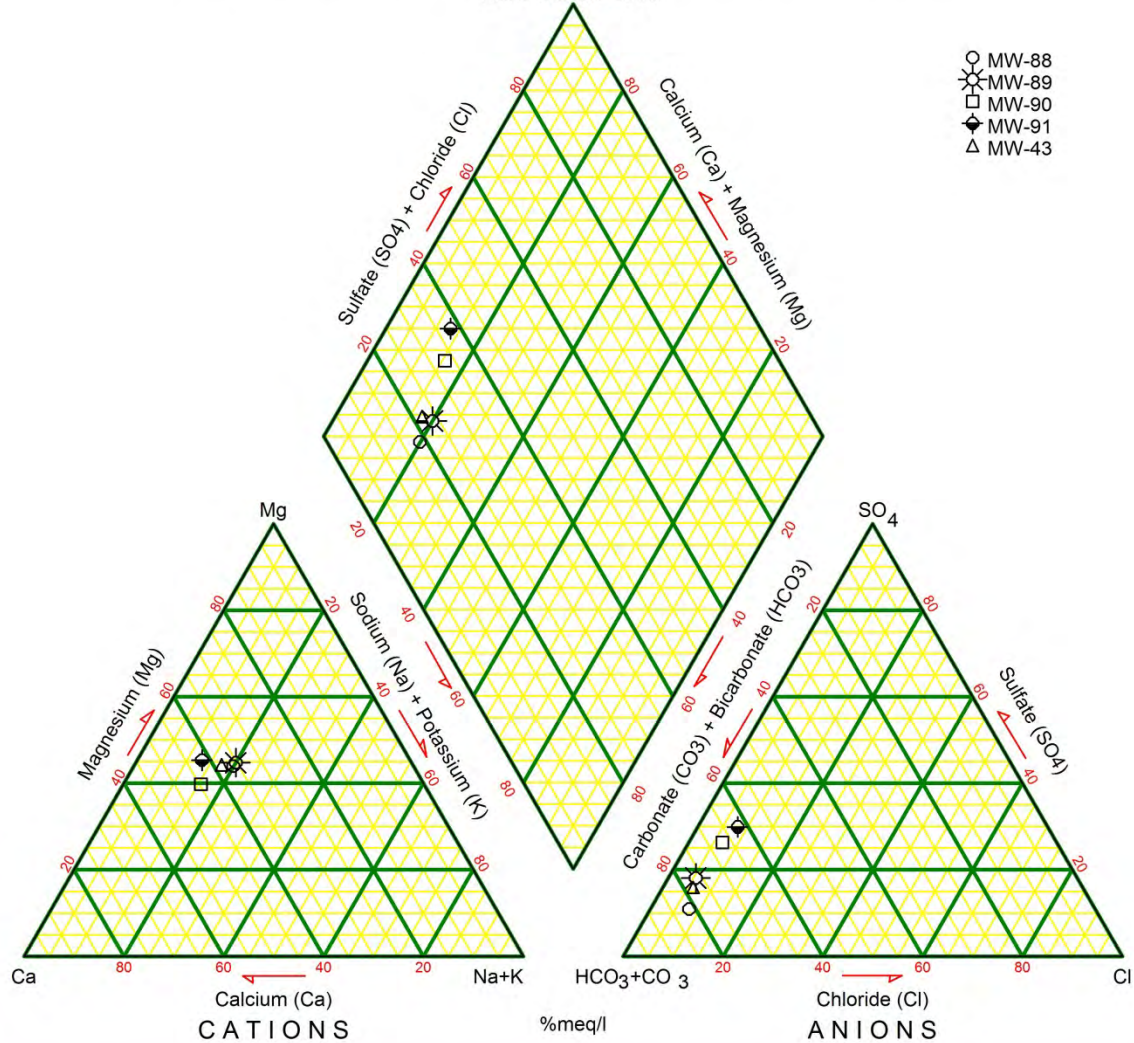
Second Quarter 2013



Cedar Hills Regional Landfill

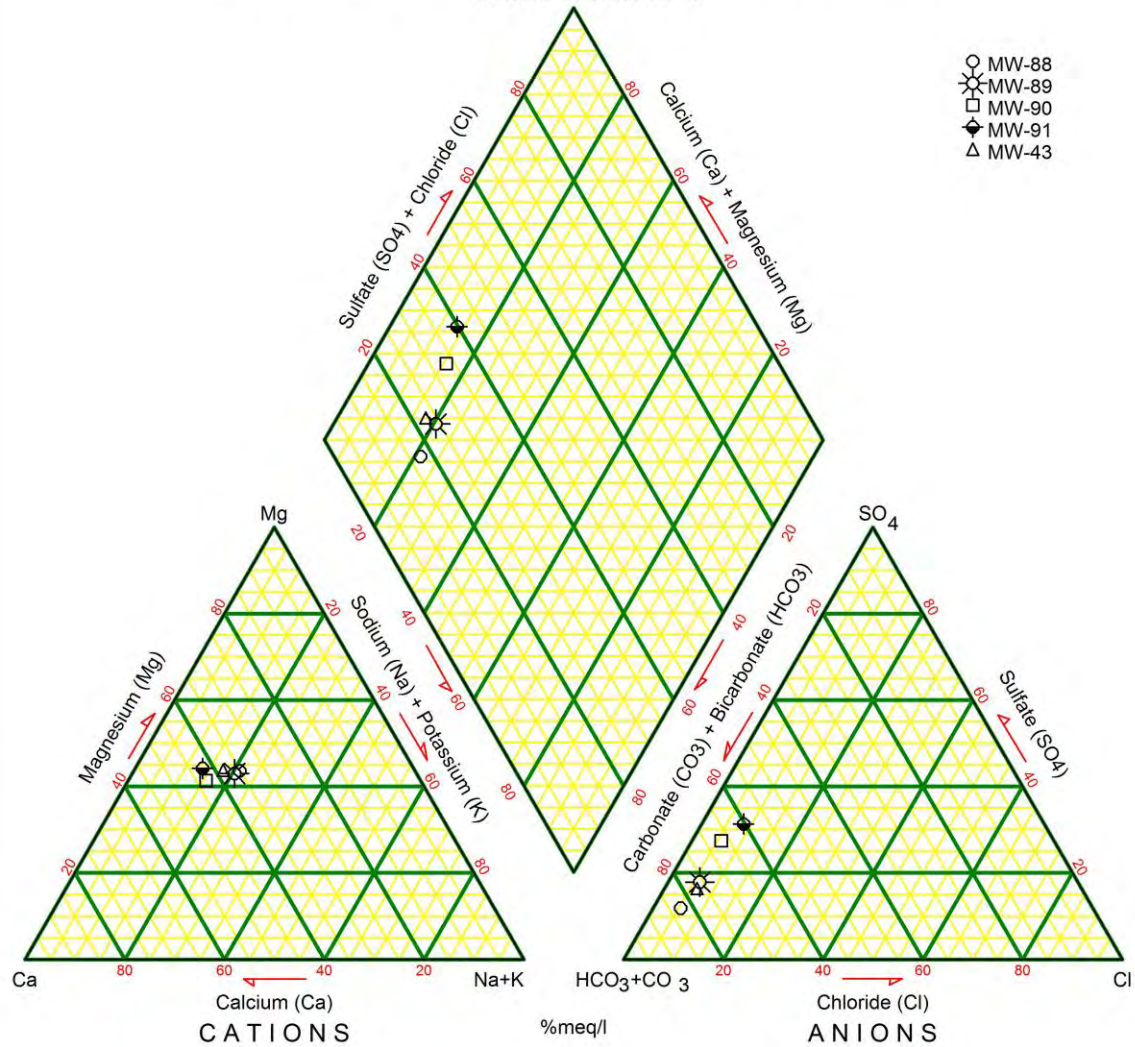
Figure 6. Regional Aquifer Wells Downgradient of North End Facilities

Third Quarter 2013



Cedar Hills Regional Landfill

Figure 6. Regional Aquifer Wells Downgradient of North End Facilities
Fourth Quarter 2013



Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells

Data Collected from April 1, 2013 to June 30, 2013

Site ID Date		North and West Perched Wells														
		MW-27A 1/8/13			MW-28 1/14/13			MW-29 1/10/13			MW-55 1/8/13					
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	20.1	1.00299	51.0	8.9	0.44162	47.1	7.1	0.35329	47.2	12.6	0.62874	40.4		
Magnesium	24.3	2	6.3	0.5217	26.5	2.4	0.19996	21.3	1.9	0.15799	21.1	7.2	0.59	37.9		
Potassium	39.1	1	3.5	0.08977	4.6	0.9	0.02261	2.4	0.5	0.01292	1.7	1.7	0.04271	2.7		
Sodium	23.0	1	7.8	0.33754	17.2	6.3	0.27186	29.0	5.1	0.22314	29.8	6.3	0.27577	17.7		
Iron	55.8	2	0.0	0.00036	0.0	0.0	0.00036	0.0	0.0	0.00036	0.0	0.3	0.01017	0.7		
Manganese	54.9	2	0.1	0.00241	0.1	0.0	3.6E-05	0.0	0.0	3.6E-05	0.0	0.2	0.00561	0.4		
Ammonia-N	14.0	1	0.2	0.01335	0.7	0.0	0.00071	0.1	0.0	0.00071	0.1	0.0	0.00339	0.2		
Total Cations (meq/L)			2.0			0.9			99.9			0.7			1.6	
Anions																
Alkalinity, Total			79			24.7			25.4			62.9				
Carbonate	60.0	2	0.31825	0.01061	0.5	0.00076	2.5E-05	0.0	0.00298	9.9E-05	0.0	0.31205	0.0104	0.7		
Bicarbonate	61.0	1	95.49	1.56516	80.8	30.13	0.4939	53.9	30.98	0.50782	67.9	76.10	1.24741	79.7		
Chloride	35.5	1	4.9	0.1368	7.1	3.7	0.10408	11.4	3.0	0.08575	11.5	1.9	0.05303	3.4		
Nitrate-N	14.0	1	0.1	0.00842	0.4	0.5	0.03684	4.0	1.6	0.11637	15.6	0.0	0.00071	0.0		
Sulfate	96.1	2	10.4	0.21654	11.2	13.5	0.28108	30.7	1.8	0.03769	5.0	12.2	0.25401	16.2		
Total Anions (meq/L)			1.9			0.9			100.0			0.7			1.6	
Total Ions (meq/L)			3.9			1.9			1.5			3.1				
Cation/Anion Ratio			1.02			1.02			1.00			0.99				
Percent Difference			0.8			1.1			0.0			-0.3				
TRILINEAR DIAGRAM DATA																
sum (Ca, Mg, Na+K)			1.95			0.94			0.75			1.54				
Calcium			51.4			47.2			47.3			40.9				
Magnesium			26.7			21.4			21.1			38.4				
Sodium + Potassium			21.9			31.5			31.6			20.7				
						100.0										
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.93			0.88			0.63			1.56				
Sulfate			11.2			32.0			6.0			16.2				
Chloride			7.1			11.8			13.6			3.4				
Bicarbonate + Carbonate			81.7			56.2			80.4			80.4				

Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells

Data Collected from April 1, 2013 to June 30, 2013

Site ID		East Perched Zone												SSWA		
		MW-30A			MW-47			MW-62			MW-EB6			MW-101		
Date		1/29/13			1/10/13			1/10/13			1/14/13			1/28/13		
Cations	MW	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	26.4	1.31737	42.3	154.0	7.68463	53.3	19.0	0.9481	43.1	6.0	0.2994	21.0	67.0	3.34331	45.6
Magnesium	24.3	13.5	1.11088	35.6	68.6	5.64493	39.2	6.7	0.55215	25.1	3.3	0.27155	19.0	39.1	3.21744	43.9
Potassium	39.1	1.7	0.04399	1.4	4.8	0.12226	0.8	0.9	0.02404	1.1	1.2	0.03069	2.2	3.1	0.07826	1.1
Sodium	23.0	14.8	0.64376	20.7	20.0	0.86995	6.0	15.5	0.67421	30.7	8.7	0.37712	26.4	14.6	0.63507	8.7
Iron	55.8	0.0	0.00036	0.0	0.7	0.02417	0.2	0.0	0.00036	0.0	6.9	0.24746	17.3	0.1	0.00189	0.0
Manganese	54.9	0.0	3.6E-05	0.0	1.7	0.06043	0.4	0.0	3.6E-05	0.0	0.4	0.01514	1.1	1.3	0.04769	0.7
Ammonia-N	14.0	0.0	0.00071	0.0	0.0	0.00252	0.0	0.0	0.00071	0.0	2.6	0.18562	13.0	0.0	0.001	0.0
Total Cations (meq/L)			3.1			14.4			2.2	100.0		1.4	87.0		7.3	
Anions																
Alkalinity, Total		148			672			77.6			47.9			380		
Carbonate	60.0	0.01776	0.00059	0.0	0.49661	0.01655	0.1	0.02132	0.00071	0.0	0.00245	8.2E-05	0.0	0.32237	0.01075	0.1
Bicarbonate	61.0	180.52	2.95896	90.7	818.83	13.4214	97.5	94.63	1.55106	66.2	58.43	0.95777	80.6	462.94	7.58811	97.0
Chloride	35.5	2.6	0.07418	2.3	6.8	0.19237	1.4	6.0	0.16811	7.2	2.0	0.055	4.6	3.9	0.11057	1.4
Nitrate-N	14.0	0.3	0.02477	0.8	0.0	0.00071	0.0	3.3	0.23345	10.0	0.1	0.00426	0.4	0.0	0.00071	0.0
Sulfate	96.1	9.8	0.20446	6.3	6.5	0.13554	1.0	18.7	0.38935	16.6	8.2	0.17156	14.4	5.3	0.10973	1.4
Total Anions (meq/L)			3.3			13.8			2.3	100.0		1.2	100.0		7.8	
Total Ions (meq/L)			6.4			28.2			4.5			2.6			15.1	
Cation/Anion Ratio			0.96			1.05			0.94			1.20			0.94	
Percent Difference			-2.3			2.3			-3.1			9.1			-3	
TRILINEAR DIAGRAM DATA																
sum (Ca, Mg, Na+K)			3.12			14.32			2.20			0.98			7.27	
Calcium				42.3			53.7			43.12			30.59			45.96
Magnesium				35.7			39.4			25.11			27.74			44.23
Sodium + Potassium				22.1			6.9			31.76			41.67			9.81
										100.0			100.0			
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			3.24			13.77			2.11			1.18			7.82	
Sulfate				6.3			1.0			18.5			14.5			1.4
Chloride				2.3			1.4			8.0			4.6			1.4
Bicarbonate + Carbonate				91.4			97.6			73.6			80.9			97.2

Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells

Data Collected from April 1, 2013 to June 30, 2013

Site ID Date		North and West Perched Wells														
		MW-27A 4/10/13			MW-28 4/15/13			MW-29 4/11/13			MW-30A 4/15/13					
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	17.6	0.87824	54.1	8.4	0.41667	49.1	7.3	0.36228	49.4	22.4	1.11776	40.4		
Magnesium	24.3	2	5.0	0.40979	25.2	2.1	0.1761	20.7	1.8	0.15141	20.7	12.4	1.02037	36.9		
Potassium	39.1	1	2.8	0.07085	4.4	0.9	0.02289	2.7	0.5	0.01202	1.6	1.6	0.03964	1.4		
Sodium	23.0	1	5.9	0.25751	15.9	5.3	0.23184	27.3	4.7	0.204	27.8	13.4	0.58287	21.1		
Iron	55.8	2	0.0	0.00036	0.0	0.0	0.00047	0.1	0.1	0.00247	0.3	0.1	0.00314	0.1		
Manganese	54.9	2	0.0	0.00116	0.1	0.0	5.4E-05	0.0	0.0	4E-05	0.0	0.0	4E-05	0.0		
Ammonia-N	14.0	1	0.1	0.00589	0.4	0.0	0.00071	0.1	0.0	0.00071	0.1	0.0	0.00071	0.0		
Total Cations (meq/L)			1.6			0.8			99.9			0.7			2.8	
Anions																
Alkalinity, Total			62			25.9			23			161				
Carbonate	60.0	2	0.04582	0.00153	0.1	0.00046	1.5E-05	0.0	0.00355	0.00012	0.0	0.01276	0.00043	0.0		
Bicarbonate	61.0	1	75.55	1.23829	81.4	31.60	0.51791	55.4	28.05	0.45981	64.9	196.39	3.21909	91.7		
Chloride	35.5	1	3.7	0.1038	6.8	3.7	0.10465	11.2	3.1	0.08688	12.3	1.4	0.03921	1.1		
Nitrate-N	14.0	1	0.2	0.01499	1.0	0.3	0.01863	2.0	1.7	0.12208	17.2	0.6	0.04198	1.2		
Sulfate	96.1	2	7.8	0.16324	10.7	14.1	0.29357	31.4	1.9	0.03998	5.6	10.1	0.21029	6.0		
Total Anions (meq/L)			1.5			0.9			100.0			0.7			3.5	
Total Ions (meq/L)			3.1			1.8			1.4			6.3				
Cation/Anion Ratio			1.07			0.91			1.03			0.79				
Percent Difference			3.2			-4.8			1.7			-11.9				
TRILINEAR DIAGRAM DATA																
sum (Ca, Mg, Na+K)			1.62			0.85			0.73			2.76				
Calcium						54.3			49.2			49.6			40.5	
Magnesium						25.4			20.8			20.7			37.0	
Sodium + Potassium						20.3			30.1			29.6			22.5	
									100.0							
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.51			0.92			0.59			3.47				
Sulfate						10.8			32.0			6.8			6.1	
Chloride						6.9			11.4			14.8			1.1	
Bicarbonate + Carbonate						82.3			56.5			78.4			92.8	

Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells

Data Collected from April 1, 2013 to June 30, 2013

Site ID Date			East Perched Zone												SSWA								
			MW-47 4/19/13			MW-55 4/9/13			MW-62 4/11/13			MW-101 4/24/13			MW-EB6 4/15/13								
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	125.0	6.23752	48.7	13.4	0.66866	43.0	17.7	0.88323	46.5	67.0	3.34331	44.3	6.4	0.31886	23.1						
Magnesium	24.3	2	67.6	5.56264	43.5	6.9	0.56532	36.3	4.6	0.38099	20.1	40.6	3.34088	44.2	3.2	0.26497	19.2						
Potassium	39.1	1	4.3	0.1087	0.8	1.6	0.04118	2.6	0.8	0.0211	1.1	3.3	0.08466	1.1	1.3	0.03223	2.3						
Sodium	23.0	1	15.6	0.67856	5.3	6.0	0.26186	16.8	14.1	0.61332	32.3	16.7	0.72641	9.6	8.0	0.34581	25.0						
Iron	55.8	2	3.3	0.11746	0.9	0.2	0.00827	0.5	0.0	0.00043	0.0	0.3	0.01096	0.1	7.1	0.25462	18.4						
Manganese	54.9	2	2.5	0.08992	0.7	0.2	0.00612	0.4	0.0	3.6E-05	0.0	1.3	0.04551	0.6	0.4	0.01296	0.9						
Ammonia-N	14.0	1	0.1	0.00713	0.1	0.1	0.0041	0.3	0.0	0.00071	0.0	0.0	0.00136	0.0	2.1	0.15278	11.1						
Total Cations (meq/L)			12.8			1.6			1.9			100.0			7.6			100.0			1.4		
Anions																							
Alkalinity, Total			642			59.8			57			383			67.4								
Carbonate	60.0	2	0.18051	0.00602	0.0	0.26465	0.00882	0.6	0.00988	0.00033	0.0	0.3402	0.01134	0.1	0.00194	6.5E-05	0.0						
Bicarbonate	61.0	1	782.87	12.832	97.5	72.42	1.187	77.9	69.52	1.1395	65.8	466.57	7.64751	97.2	82.22	1.34773	92.7						
Chloride	35.5	1	6.7	0.18955	1.4	1.9	0.05416	3.6	4.9	0.13793	8.0	3.8	0.10803	1.4	0.8	0.02395	1.6						
Nitrate-N	14.0	1	0.0	0.00071	0.0	0.0	0.00071	0.0	2.2	0.15421	8.9	0.0	0.00071	0.0	0.2	0.01478	1.0						
Sulfate	96.1	2	6.2	0.12846	1.0	13.1	0.27275	17.9	14.4	0.29982	17.3	4.7	0.09869	1.3	3.3	0.06788	4.7						
Total Anions (meq/L)			13.2			1.5			1.7			100.0			7.9			100.0			1.5		
Total Ions (meq/L)			26.0			3.1			3.6						15.4			2.8					
Cation/Anion Ratio			0.97			1.02			1.10			0.96			0.95								
Percent Difference			-1.4			1.0			4.6			-2.0			-3								
TRILINEAR DIAGRAM DATA																							
sum (Ca, Mg, Na+K)			12.59			1.54			1.90			7.50			0.96								
Calcium						49.6			43.5			46.52			44.61			33.15					
Magnesium						44.2			36.8			20.07			44.57			27.55					
Sodium + Potassium						6.3			19.7			33.41			10.82			39.30					
												100.0			100.0								
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			13.16			1.52			1.58			7.87			1.44								
Sulfate						1.0			17.9			19.0			1.3			4.7					
Chloride						1.4			3.6			8.7			1.4			1.7					
Bicarbonate + Carbonate						97.6			78.5			72.3			97.4			93.6					

Table 8
Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells

Data Collected from July 1, 2013 to September 30, 2013

Site ID Date		North and West Perched Wells														
		MW-27A 7/17/13			MW-28 7/16/13			MW-29 7/16/13			MW-55 7/15/13					
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	21.2	1.05788	54.7	9.8	0.49102	50.0	7.4	0.36826	50.3	12.7	0.63373	42.4		
Magnesium	24.3	2	5.7	0.46904	24.3	2.4	0.19996	20.3	2.0	0.16046	21.9	6.7	0.54968	36.8		
Potassium	39.1	1	3.6	0.0931	4.8	1.1	0.02813	2.9	0.6	0.01611	2.2	1.9	0.04936	3.3		
Sodium	23.0	1	6.9	0.301	15.6	6.0	0.26229	26.7	4.3	0.18617	25.4	5.6	0.24185	16.2		
Iron	55.8	2	0.0	0.00036	0.0	0.0	0.00036	0.0	0.0	0.00036	0.0	0.2	0.0087	0.6		
Manganese	54.9	2	0.0	0.00123	0.1	0.0	0.00013	0.0	0.0	3.6E-05	0.0	0.2	0.0059	0.4		
Ammonia-N	14.0	1	0.2	0.01142	0.6	0.0	0.00071	0.1	0.0	0.00071	0.1	0.1	0.00443	0.3		
Total Cations (meq/L)			1.9			1.0			99.9			0.7			1.5	
Anions																
Alkalinity, Total			78			26.4			23			62.9				
Carbonate	60.0	2	0.09377	0.00313	0.2	0.00132	4.4E-05	0.0	0.00399	0.00013	0.0	0.23719	0.00791	0.5		
Bicarbonate	61.0	1	95.34	1.56264	82.2	32.21	0.52788	56.6	28.05	0.4598	65.1	76.26	1.24991	81.1		
Chloride	35.5	1	4.5	0.12608	6.6	4.4	0.12439	13.3	2.5	0.0708	10.0	1.8	0.04964	3.2		
Nitrate-N	14.0	1	0.0	0.00236	0.1	0.2	0.01178	1.3	2.0	0.14064	19.9	0.0	0.00071	0.0		
Sulfate	96.1	2	10.0	0.20779	10.9	12.9	0.26859	28.8	1.7	0.03456	4.9	11.2	0.23319	15.1		
Total Anions (meq/L)			1.9			0.9			100.0			0.7			1.5	
Total Ions (meq/L)			3.8			1.9			1.4			3.0				
Cation/Anion Ratio			1.02			1.05			1.04			0.97				
Percent Difference			0.8			2.6			1.8			-1.6				
TRILINEAR DIAGRAM DATA																
sum (Ca, Mg, Na+K)			1.92			0.98			0.73			1.47				
Calcium			55.1			50.0			50.4			43.0				
Magnesium			24.4			20.4			22.0			37.3				
Sodium + Potassium			20.5			29.6			27.7			19.7				
						100.0										
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.90			0.92			0.57			1.54				
Sulfate			10.9			29.2			6.1			15.1				
Chloride			6.6			13.5			12.5			3.2				
Bicarbonate + Carbonate			82.4			57.3			81.4			81.6				

Table 8
Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells

Data Collected from July 1, 2013 to September 30, 2013

Site ID	Date	MW	n	East Perched Zone									SSWA		
				MW-30A			MW-47			MW-62			MW-EB6		
				7/16/13			7/16/13			No Sample			No Sample		
Cations				mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
Calcium	40.1	2		27.0	1.34731	41.7	145.0	7.23553	51.6						
Magnesium	24.3	2		13.7	1.12734	34.9	70.0	5.76013	41.1						
Potassium	39.1	1		1.7	0.04425	1.4	5.1	0.1307	0.9						
Sodium	23.0	1		16.4	0.71336	22.1	18.9	0.8221	5.9						
Iron	55.8	2		0.0	0.00036	0.0	0.2	0.00698	0.0						
Manganese	54.9	2		0.0	3.6E-05	0.0	1.8	0.06662	0.5						
Ammonia-N	14.0	1		0.0	0.00071	0.0	0.0	0.00314	0.0						
Total Cations (meq/L)					3.2			14.0						7.4	
Anions															
Alkalinity, Total				139			688							323	
Carbonate	60.0	2		0.02302	0.00077	0.0	0.3858	0.01286	0.1					0.1343	0.00448
Bicarbonate	61.0	1		169.53	2.77881	87.2	838.58	13.7451	97.7					393.79	6.45455
Chloride	35.5	1		5.9	0.1667	5.2	6.1	0.17262	1.2					3.6	0.10013
Nitrate-N	14.0	1		1.1	0.07782	2.4	0.0	0.00071	0.0					0.0	0.00071
Sulfate	96.1	2		7.8	0.16303	5.1	6.9	0.14283	1.0					4.4	0.0912
Total Anions (meq/L)					3.2			14.1						6.7	
Total Ions (meq/L)					6.4			28.1						14.1	
Cation/Anion Ratio					1.01			1.00						1.12	
Percent Difference					0.7			-0.2						6	
TRILINEAR DIAGRAM DATA															
sum (Ca, Mg, Na+K)					3.23			13.95						7.33	
Calcium						41.7			51.9						47.09
Magnesium						34.9			41.3						42.08
Sodium + Potassium						23.4			6.8						10.83
sum (SO ₄ , Cl, HCO ₃ +CO ₃)					3.11			14.07						6.65	
Sulfate						5.2			1.0						1.4
Chloride						5.4			1.2						1.5
Bicarbonate + Carbonate						89.4			97.8						97.1

Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells

Data Collected from October 1, 2013 to December 31, 2013

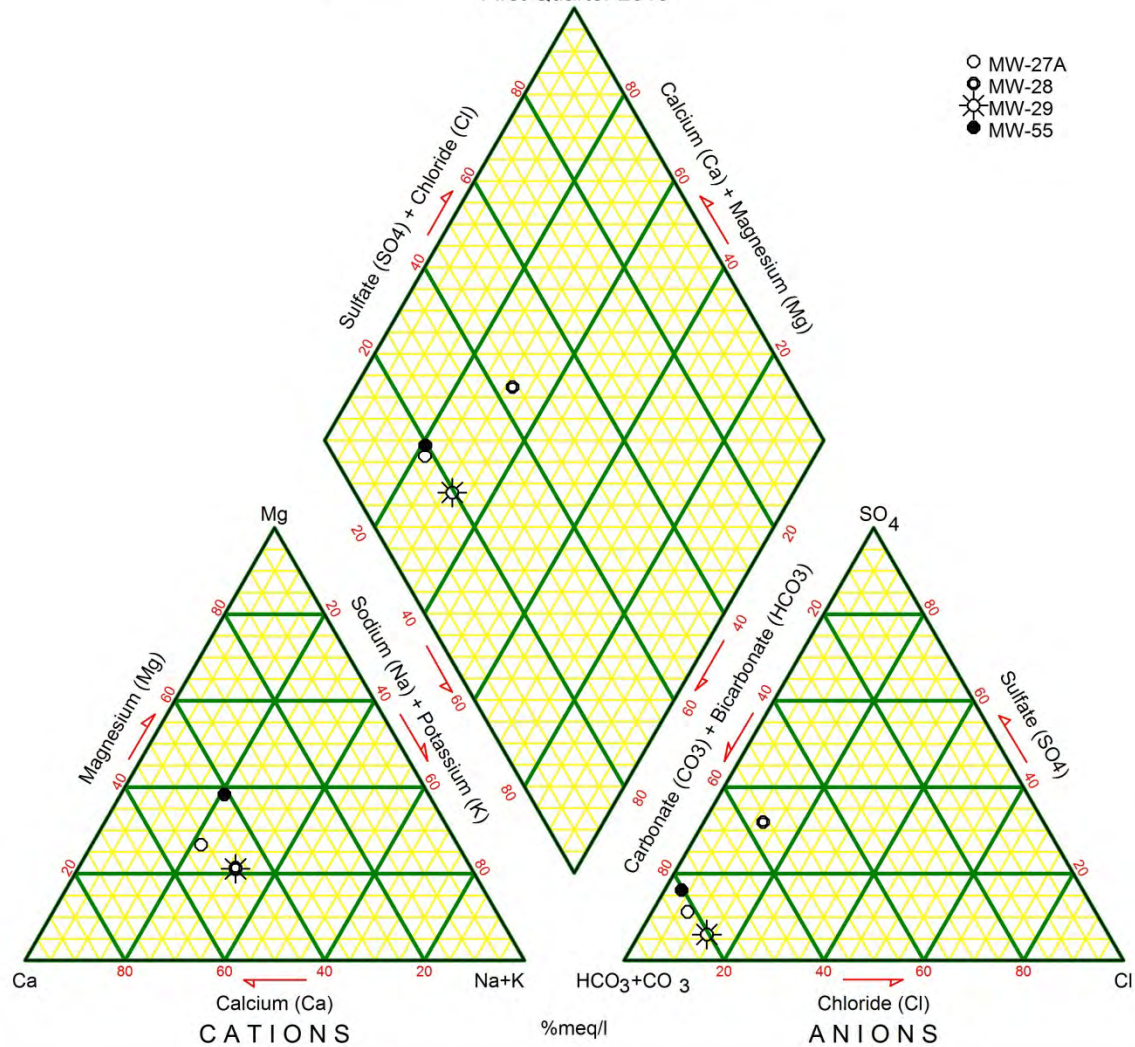
		North and West Perched Wells											
Site ID		MW-27A			MW-28			MW-29			MW-55		
Date		10/8/13			10/18/13			No Sample			10/8/13		
Cations	MW	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)	mg/L	meq/L	%(meq)
Calcium	40.1	2	18.3	0.91317	53.7	8.6	0.43014	48.6			11.6	0.57884	42.0
Magnesium	24.3	2	5.1	0.41638	24.5	2.1	0.1761	19.9			6.1	0.50442	36.6
Potassium	39.1	1	3.3	0.08543	5.0	0.8	0.02166	2.4			1.5	0.03811	2.8
Sodium	23.0	1	6.2	0.26969	15.9	5.9	0.2562	28.9			5.4	0.23532	17.1
Iron	55.8	2	0.0	0.00036	0.0	0.0	0.00036	0.0			0.3	0.01089	0.8
Manganese	54.9	2	0.1	0.0019	0.1	0.0	5.8E-05	0.0			0.1	0.00524	0.4
Ammonia-N	14.0	1	0.2	0.01399	0.8	0.0	0.00071	0.1			0.1	0.00403	0.3
Total Cations (meq/L)			1.7			0.9	99.9				1.4		
Anions													
Alkalinity, Total			78			25.9					57.7		
Carbonate	60.0	2	0.26266	0.00876	0.5	0.00149	5E-05	0.0			0.16913	0.00564	0.4
Bicarbonate	61.0	1	94.75	1.55301	82.8	31.59	0.51787	53.8			70.05	1.14819	79.9
Chloride	35.5	1	4.2	0.11931	6.4	4.4	0.12439	12.9			2.0	0.05754	4.0
Nitrate-N	14.0	1	0.0	0.0015	0.1	0.3	0.01878	1.9			0.0	0.00157	0.1
Sulfate	96.1	2	9.2	0.19197	10.2	14.5	0.3019	31.4			10.8	0.22487	15.6
Total Anions (meq/L)			1.9			1.0	100.0				1.4		
Total Ions (meq/L)			3.6			1.8					2.8		
Cation/Anion Ratio			0.91			0.92					0.96		
Percent Difference			-4.9			-4.2					-2.2		
TRILINEAR DIAGRAM DATA													
sum (Ca, Mg, Na+K)			1.68			0.88					1.36		
Calcium				54.2			48.7					42.7	
Magnesium				24.7			19.9					37.2	
Sodium + Potassium				21.1			31.4					20.2	
							100.0						
sum (SO ₄ , Cl, HCO ₃ +CO ₃)			1.87			0.94					1.44		
Sulfate				10.2			32.0					15.7	
Chloride				6.4			13.2					4.0	
Bicarbonate + Carbonate				83.4			54.9					80.3	

Ion Balance Calculations
Cedar Hills Landfill Perched Zones GW Monitoring Wells

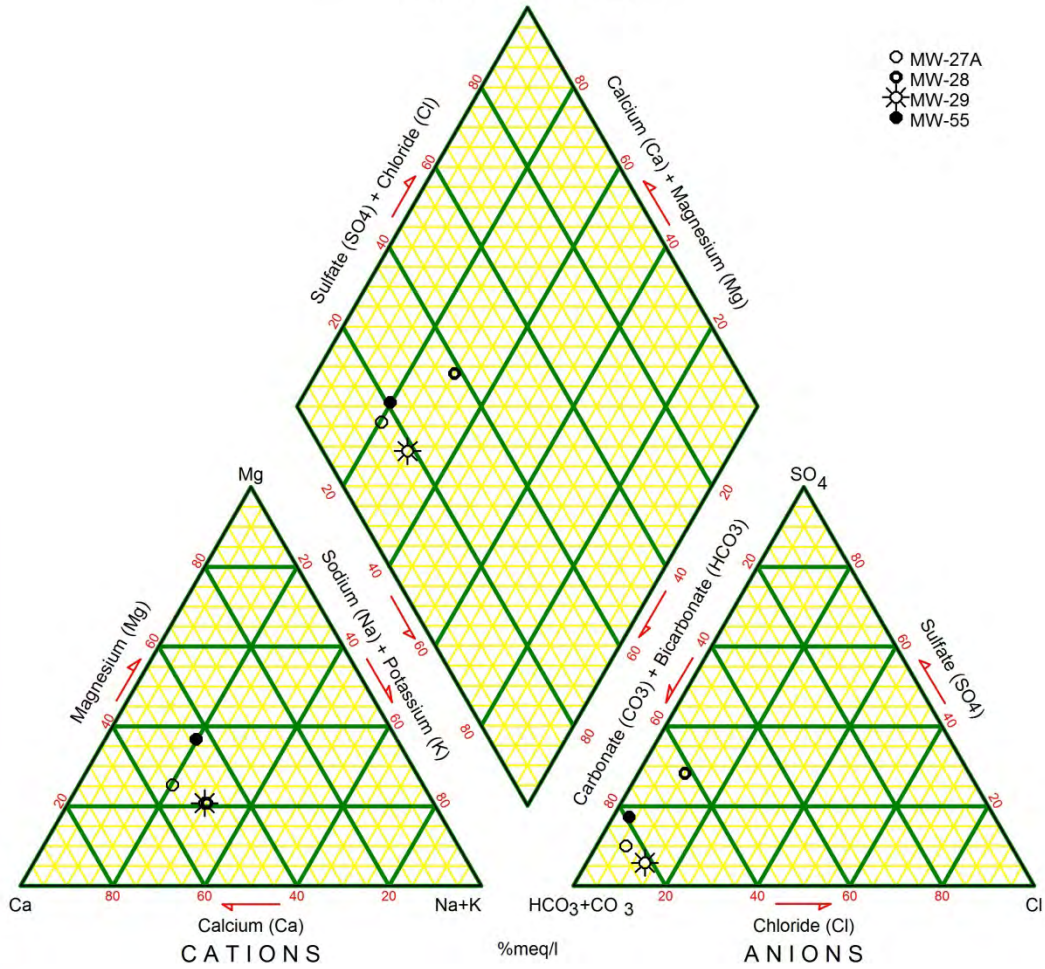
Data Collected from October 1, 2013 to December 31, 2013

Site ID	Date	MW	n	East Perched Zone												SSWA		
				MW-30A			MW-47			MW-62			MW-EB6			MW-101		
				10/14/13			10/28/13			10/28/13			11/20/13			10/21/13		
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		37.2	1.85629	48.6	126.0	6.28743	51.4	15.1	0.75349	42.9	8.7	0.43613	6.9	56.8	2.83433	51.3
Magnesium	24.3	2		17.2	1.41535	37.1	59.2	4.87143	39.8	5.0	0.41473	23.6	4.6	0.37852	6.0	24.0	1.9749	35.7
Potassium	39.1	1		1.9	0.04834	1.3	5.9	0.1509	1.2	0.9	0.02327	1.3	2.7	0.06931	1.1	2.4	0.06138	1.1
Sodium	23.0	1		11.4	0.49587	13.0	19.4	0.84385	6.9	13.0	0.56547	32.2	120.0	5.21971	82.6	13.8	0.60027	10.9
Iron	55.8	2		0.0	0.00036	0.0	0.3	0.01203	0.1	0.0	0.00036	0.0	0.9	0.03305	0.5	0.7	0.0241	0.4
Manganese	54.9	2		0.0	3.6E-05	0.0	2.0	0.07135	0.6	0.0	4.8E-05	0.0	0.5	0.01744	0.3	0.9	0.03284	0.6
Ammonia-N	14.0	1		0.0	0.00071	0.0	0.1	0.0063	0.1	0.0	0.00071	0.0	2.4	0.16777	2.7	0.0	0.00071	0.0
Total Cations (meq/L)					3.8			12.2			1.8	100.0		6.3	97.3		5.5	
Anions																		
Alkalinity, Total				169			676			49.2			160			286		
Carbonate	60.0	2		0.01981	0.00066	0.0	0.2285	0.00762	0.1	0.01823	0.00061	0.0	0.00247	8.2E-05	0.0	0.11357	0.00379	0.1
Bicarbonate	61.0	1		206.14	3.37883	88.3	824.26	13.5103	97.8	59.99	0.98324	54.6	195.19	3.19944	68.7	348.69	5.71535	96.4
Chloride	35.5	1		1.7	0.04682	1.2	6.3	0.17855	1.3	5.0	0.1416	7.9	0.8	0.0224	0.5	3.9	0.11113	1.9
Nitrate-N	14.0	1		1.6	0.1128	2.9	0.0	0.00071	0.0	3.5	0.25202	14.0	10.6	0.75676	16.2	0.0	0.00071	0.0
Sulfate	96.1	2		13.9	0.28941	7.6	5.3	0.11098	0.8	20.3	0.42266	23.5	32.7	0.68084	14.6	4.8	0.09932	1.7
Total Anions (meq/L)					3.8			13.8			1.8	100.0		4.7	100.0		5.9	
Total Ions (meq/L)					7.6			26.1			3.6			11.0			11.5	
Cation/Anion Ratio					1.00			0.89			0.98			1.36			0.93	
Percent Difference					-0.2			-6.0			-1.2			15.1			-4	
TRILINEAR DIAGRAM DATA																		
sum (Ca, Mg, Na+K)					3.82			12.15			1.76			6.10			5.47	
Calcium						48.6			51.7			42.89			7.15			51.81
Magnesium						37.1			40.1			23.60			6.20			36.10
Sodium + Potassium						14.3			8.2			33.51			86.65			12.09
												100.0			100.0			
sum (SO ₄ , Cl, HCO ₃ +CO ₃)					3.72			13.81			1.55			3.90			5.93	
Sulfate						7.8			0.8			27.3			17.4			1.7
Chloride						1.3			1.3			9.1			0.6			1.9
Bicarbonate + Carbonate						91.0			97.9			63.6			82.0			96.5
												100.0			100.0			

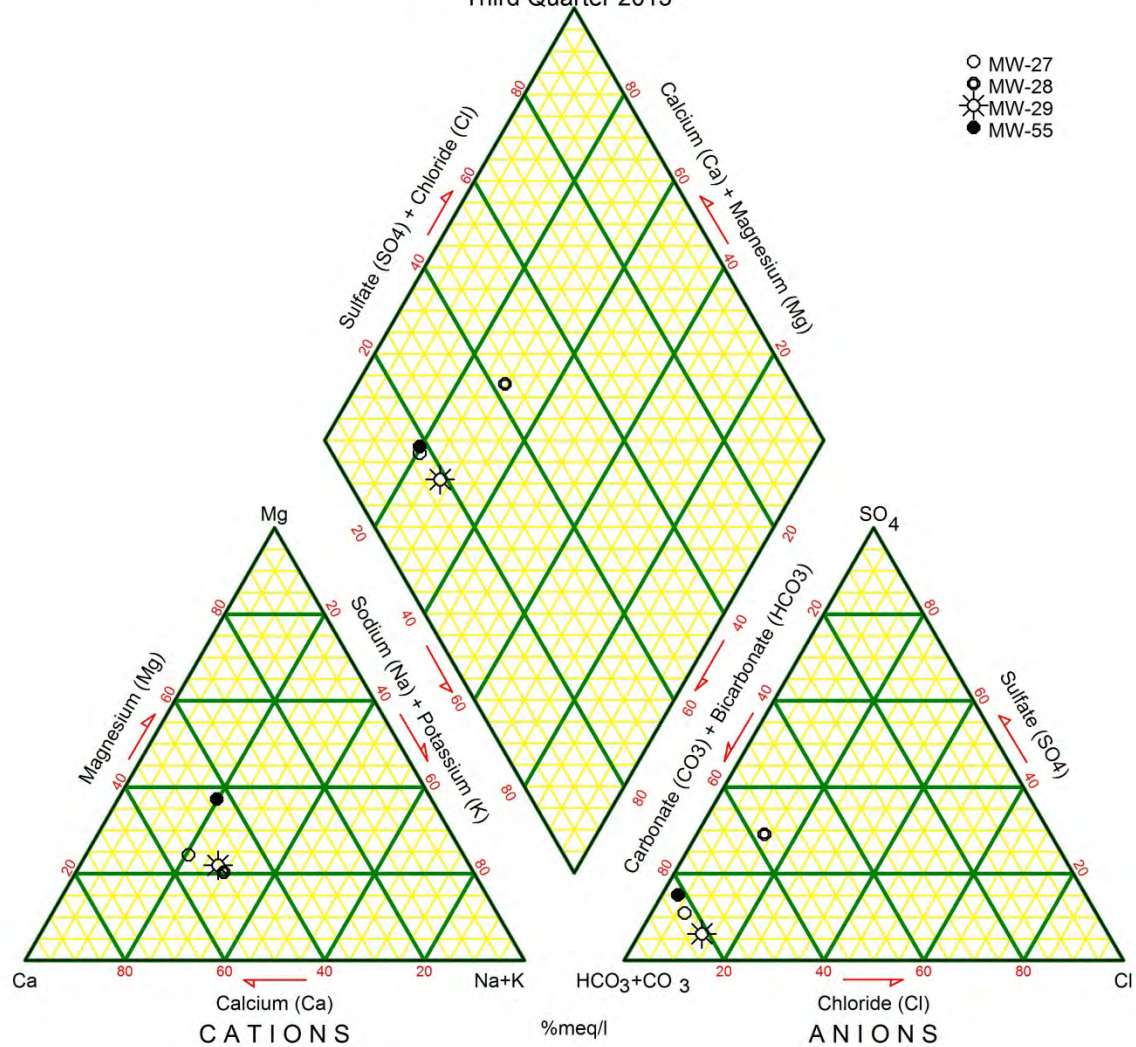
Cedar Hills Regional Landfill
 Figure 7. North and West Perched Zones Wells
 First Quarter 2013



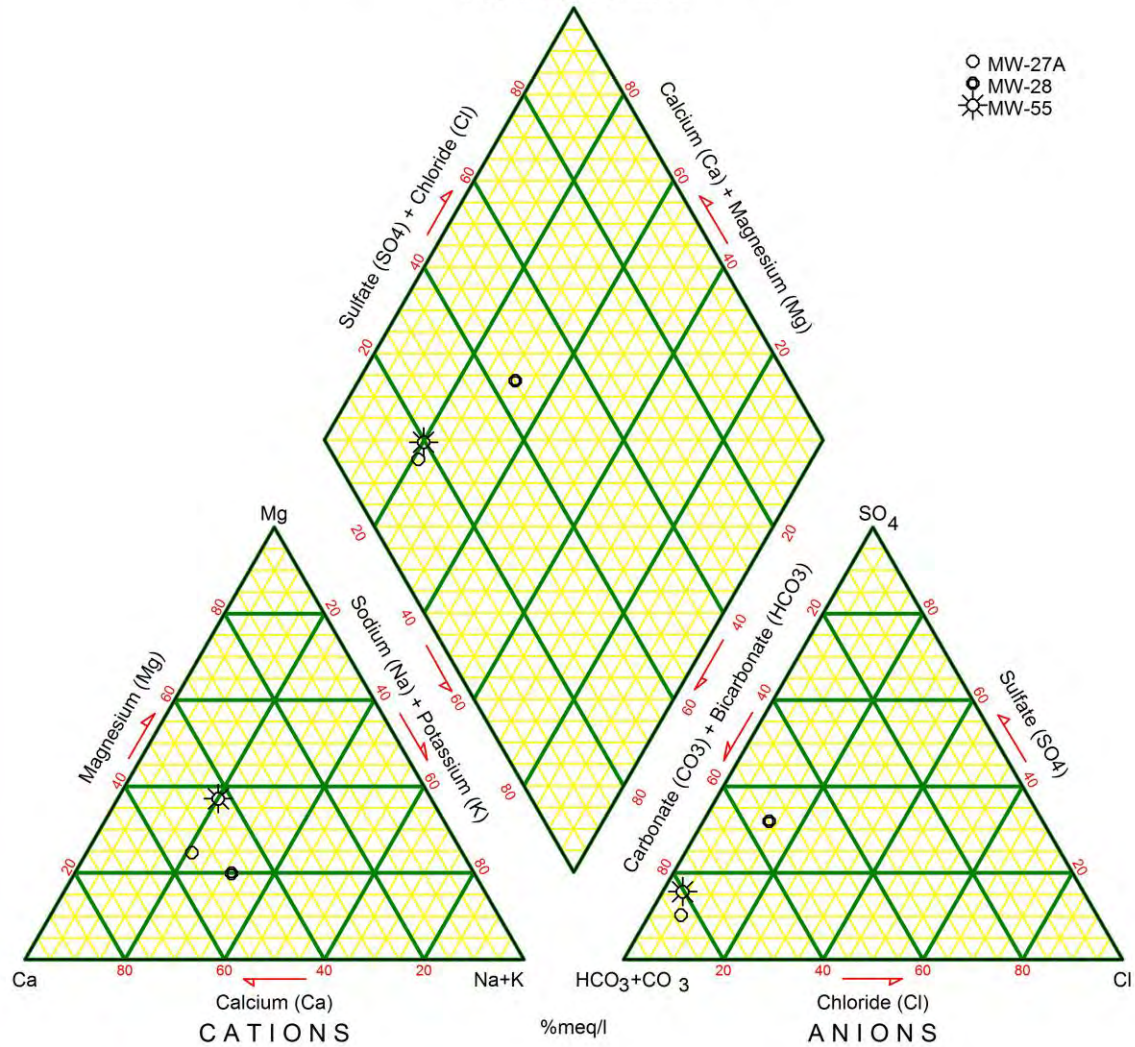
Cedar Hills Regional Landfill
 Figure 7. North and West Perched Zones Wells
 Second Quarter 2013



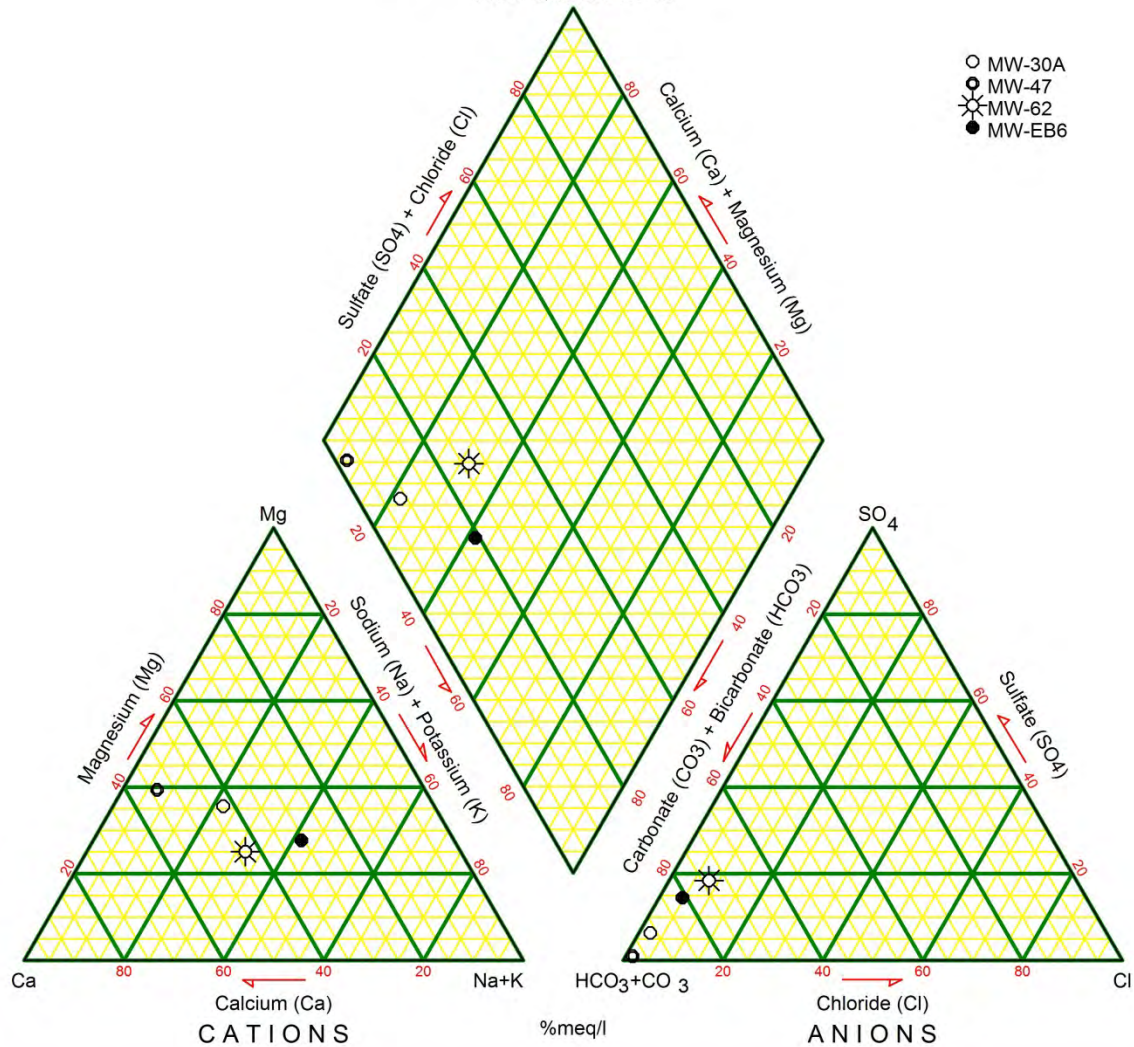
Cedar Hills Regional Landfill
 Figure 7. North and West Perched Zone Wells
 Third Quarter 2013



Cedar Hills Regional Landfill
 Figure 7. Perched Zone Wells North and West
 Fourth Quarter 2013



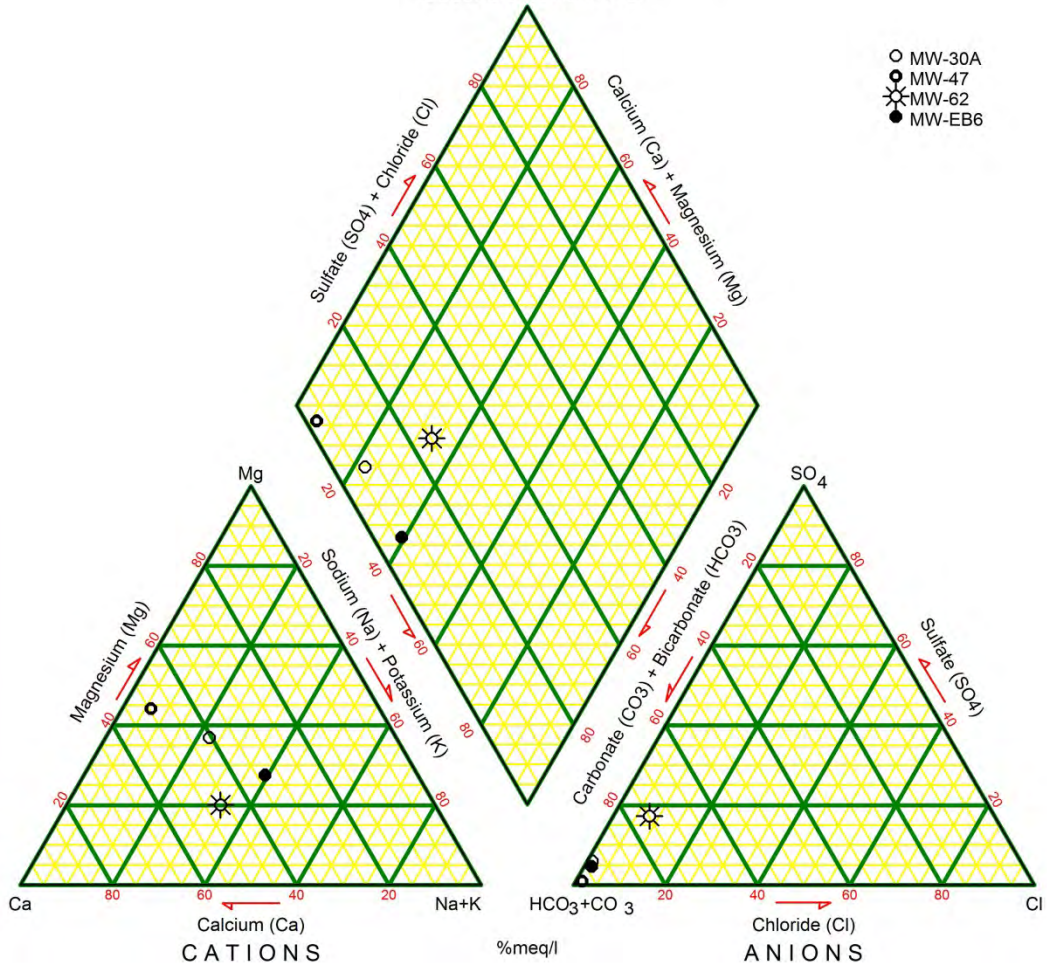
Cedar Hills Regional Landfill
 Figure 8. East Perched Zone Wells
 First Quarter 2013



Cedar Hills Regional Landfill

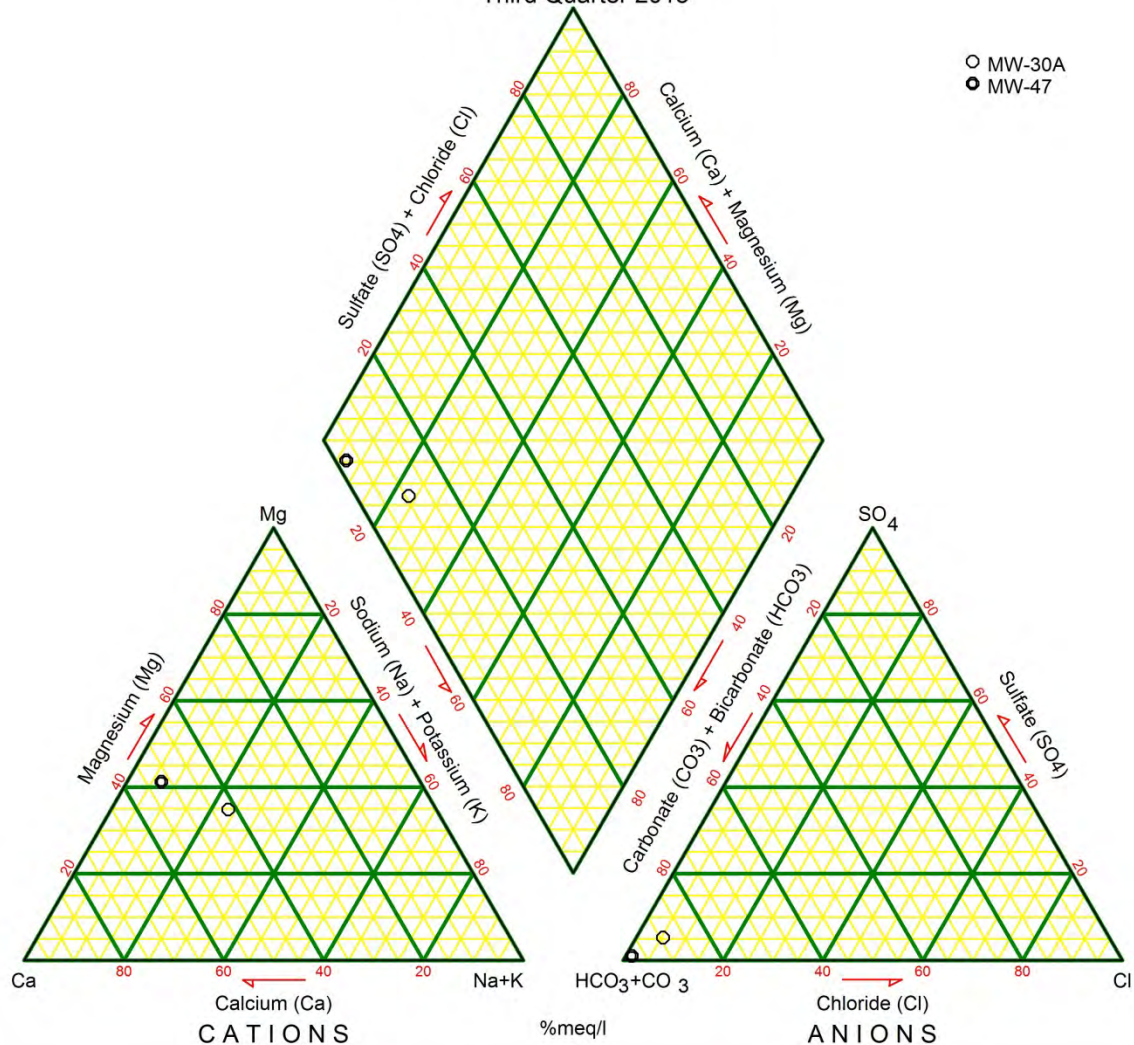
Figure 8. East Perched Zone Wells

Second Quarter 2013

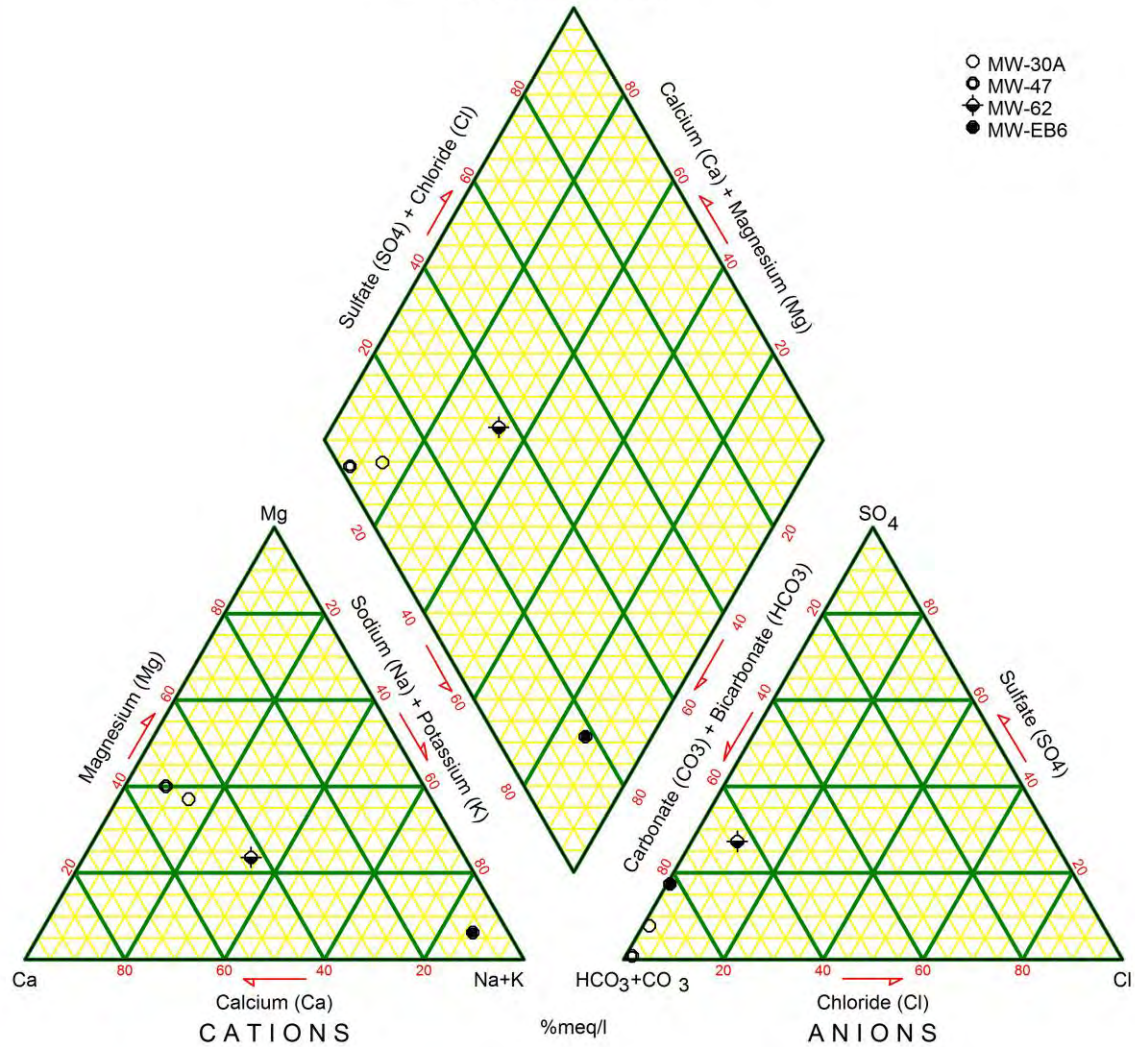


Cedar Hills Regional Landfill

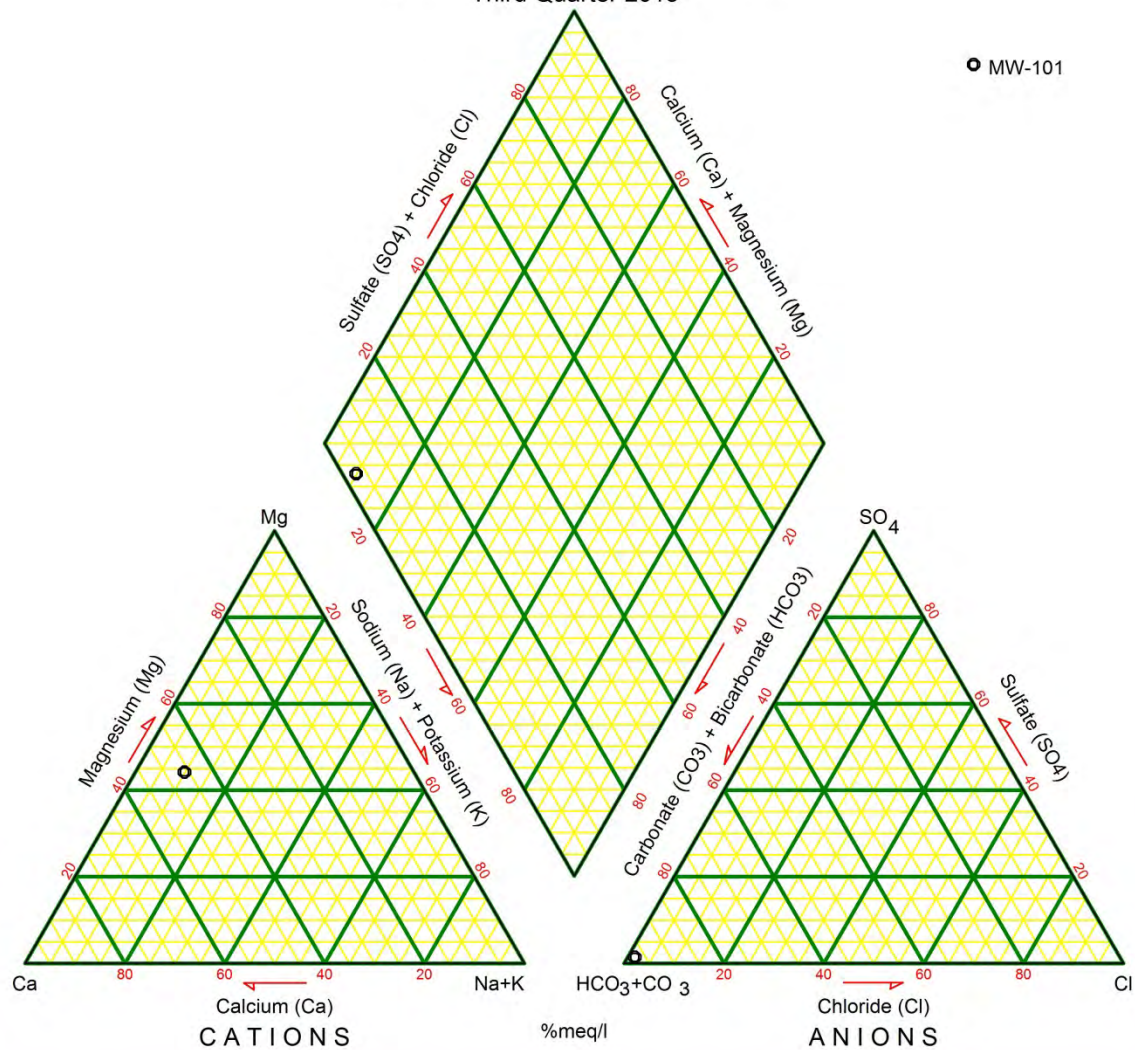
Figure 8. East Perched Zone Wells
Third Quarter 2013



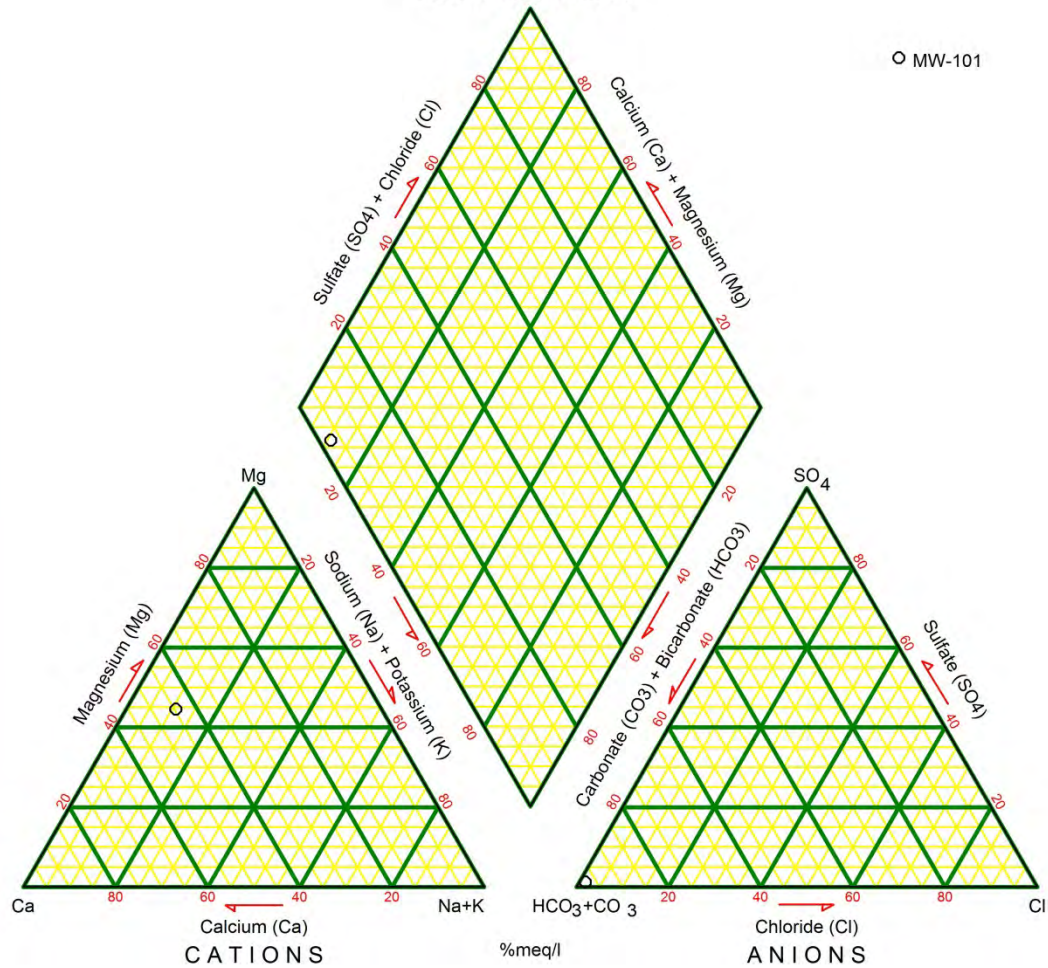
Cedar Hills Regional Landfill
Figure 8. East Perched Zone Wells
Fourth Quarter 2013



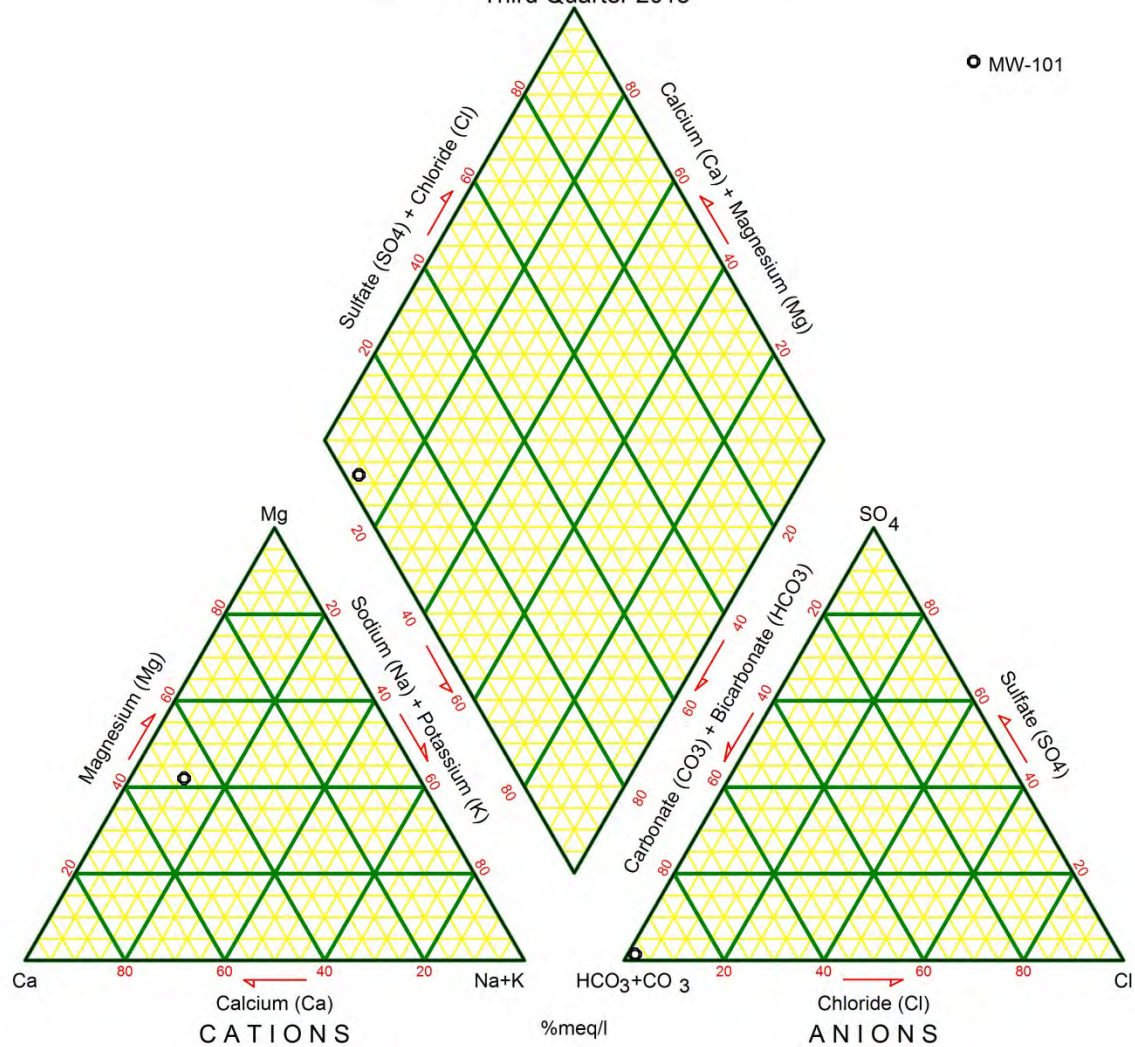
Cedar Hills Regional Landfill
 Figure 9. SSWA Perched Zone Wells
 Third Quarter 2013



Cedar Hills Regional Landfill
 Figure 9. SSWA Perched Zone Wells
 Second Quarter 2013



Cedar Hills Regional Landfill
 Figure 9. SSWA Perched Zone Wells
 Third Quarter 2013



Cedar Hills Regional Landfill
 Figure 9. SSWA Perched Zone Wells
 Fourth Quarter 2013

