

Figure 3.7 provides a plot of available anion-cation data using a conventional Piper diagram approach. From the upper left and moving counter-clockwise, the outlying values are single incidences of samples from locations BS-2, MG-1, MG-2, MG-3, RBG-4, and RBS-2. None of these anion-cation plots is abnormal for the South Valley based on area-side well sampling results by others. For comparison, Figure 3.8 provides anion-cation plots for samples collected throughout the South Valley by the USGS over a period of years. The only significant difference for the outlying values is the virtual absence of bicarbonate for samples taken from MG-1, MG-2, and MG-3.

Figure 3.9 provides correlation plots for sodium and chloride and for calcium and sulfate. Ideally, the sodium-chloride ratio should be 1:1 or higher. In this instance, a suggested ratio is approximately 1.67:1, with the increased sodium probably attributable to the predominance of silicate minerals stemming from the igneous nature of the alluvial fill material. Similarly, the ratio of calcium to sulfate should be 1:1 or lower. For the samples from this study, the ratio is approximately 0.77:1. Consequently, there is no indication of agricultural waste impact based on the inorganic analyses for anion and cation – the resulting ratios are attributable to the sediments comprising the source aquifer.

4.0 Water Level Data

No surface water elevation or flow rate measurements were made at the surface water sampling locations at the time of sampling, so determination of vertical gradients near the canals and drains is not feasible. Water level measurements in the shallow wells were made at the time of sampling. However, the records are incomplete and water level data for the sampling events prior to July 2004 are missing. The available data are presented in Table 4-1 and reflect a seasonal variation in water levels of approximately one-foot between irrigation and non-irrigation seasons.

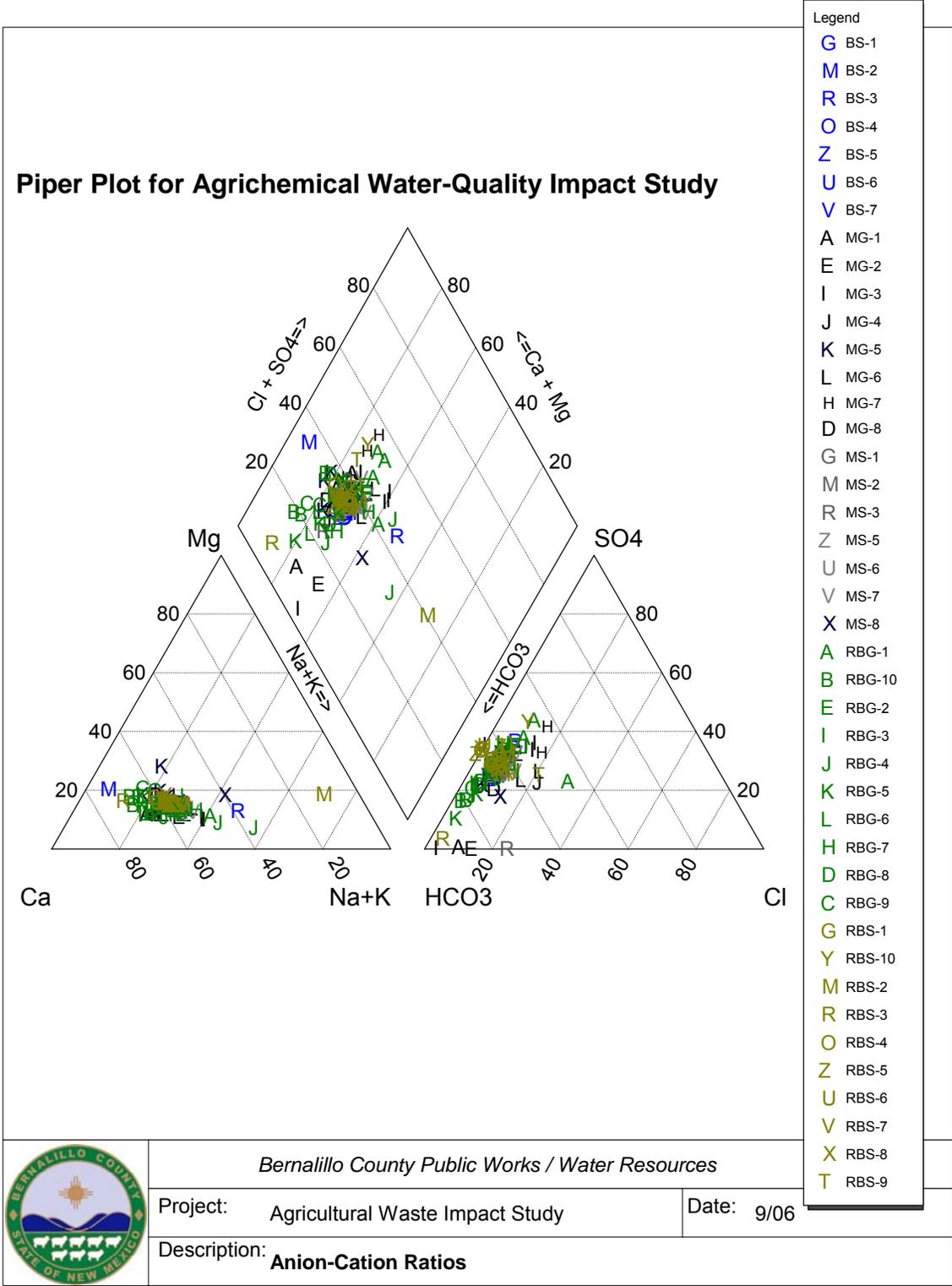
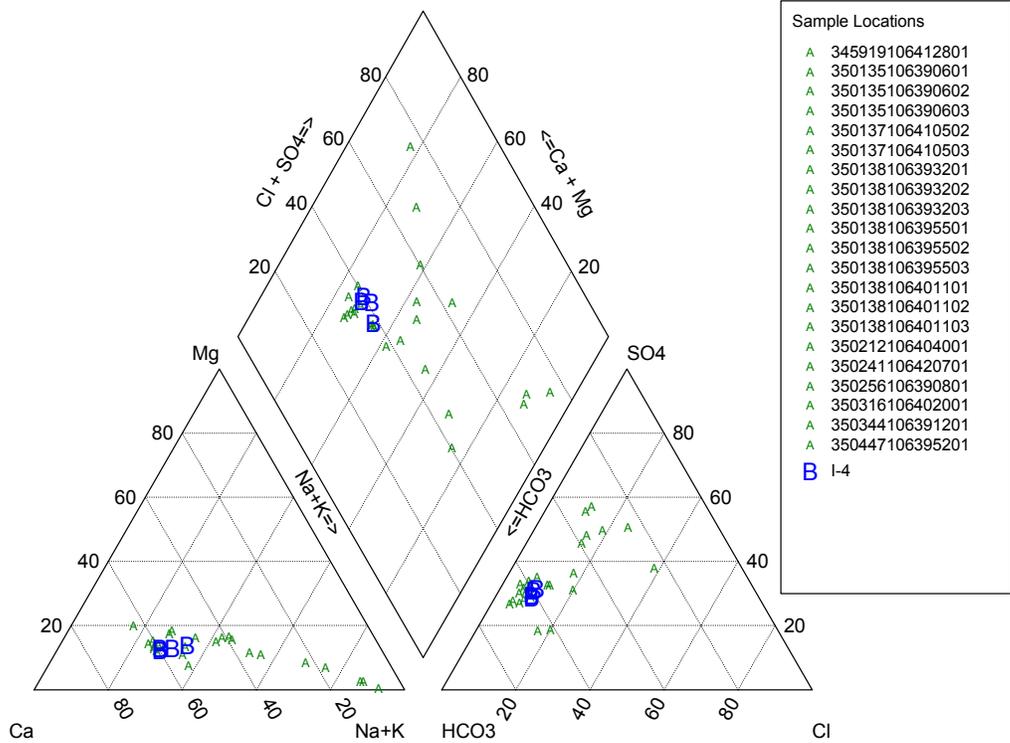


Figure 3.7 Piper Plot for Agrichemical Water-Quality Impact Study

Piper Plot for South Valley Shallow Wells



Bernalillo County Public Works / Water Resources

Project: Water Report

Date: 9/06

Description: **Piper Plot for South Valley Shallow Wells**

Figure 3.8 Piper Plot for South Valley Shallow Groundwater Wells

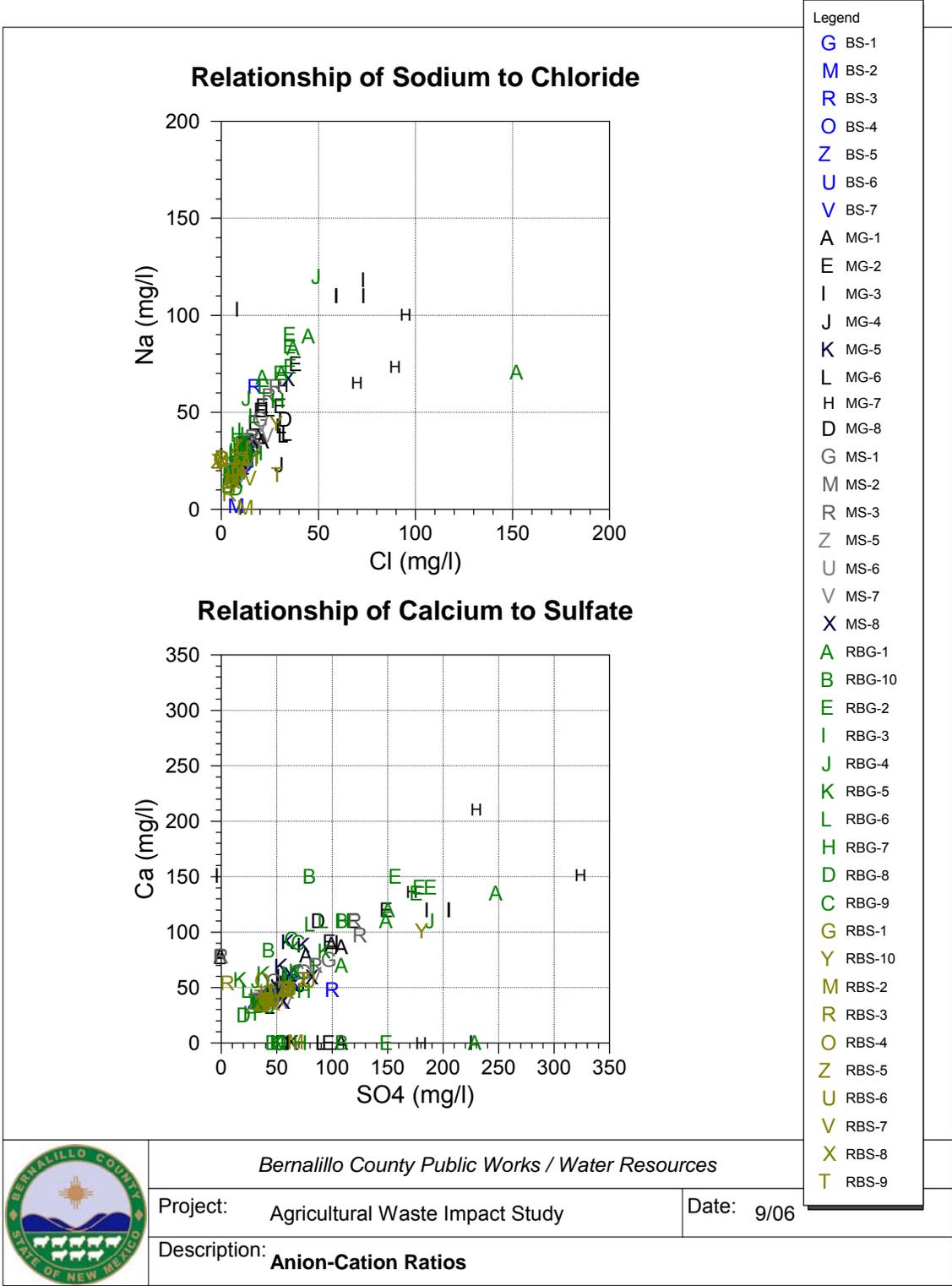


Figure 3.9 Key Anion-Cation Relationships

Table 3.11 Agrichemical Water-Quality Impact Study Water Level Data

Ag Well Sampling Water Levels								
Sample Site	1st Quarter Sampling		2nd Quarter Sampling		3rd Quarter Sampling		1st Quarter Sampling	
	Date	Depth to Water						
BS-1	3/16/2005	n/a	6/7/2005	n/a	8/24/2005	n/a		
BS-2	3/16/2005	n/a	6/7/2005	n/a	8/24/2005	n/a		
BS-3	3/16/2005	no water	6/8/2005	n/a	8/24/2005	n/a		
BS-4	3/16/2005	n/a	6/7/2005	n/a	8/24/2005	n/a		
BS-5	3/16/2005	no water	6/7/2005	n/a	8/25/2005	n/a		
BS-6	3/14/2005	n/a	6/7/2005	n/a	8/25/2005	n/a		
BS-7	3/14/2005	n/a	6/7/2005	n/a	8/25/2005	n/a		
MG-1	3/7/2005	6.2	6/20/2005	5.2	9/8/2005	5.25	3/16/2006	6.00
MG-2	3/7/2005	6.6	6/20/2005	5.5	9/8/2005	5.60	3/16/2006	6.40
MG-3	3/7/2005	9.1	6/20/2005	8.0	9/8/2005	8.00	3/16/2006	8.95
MG-4	3/8/2005	8.3	6/15/2005	7.4	9/7/2005	8.00	3/16/2006	8.25
MG-5	3/8/2005	9.51	6/16/2005	8.1	9/7/2005	9.70	3/16/2006	9.00
MG-6	3/8/2005	5.8	6/16/2005	4.1	9/12/2005	4.45	3/16/2006	n/a
MG-7	3/8/2005	5.2	6/23/2005	3.1	9/12/2005	4.30	3/16/2006	5.20
MG-8	3/29/2005	6.1	6/16/2005	5.5	9/12/2005	5.70	3/16/2006	n/a
MS-1	3/7/2005	n/a	6/20/2005	n/a	9/8/2005	n/a		
MS-2	3/7/2005	no water	6/20/2005	n/a	9/8/2005	n/a		
MS-3	3/7/2005	n/a	6/20/2005	n/a	9/8/2005	n/a		
MS-4	3/7/2005	site not found		site not found		site not found		
MS-5	3/8/2005	no water	6/16/2005	n/a	9/7/2005	n/a		
MS-6	3/8/2005	n/a	6/16/2005	n/a	9/7/2005	n/a		
MS-7	3/9/2005	n/a	6/16/2005	n/a	9/12/2005	n/a		
MS-8	3/8/2005	n/a	6/16/2005	n/a	9/12/2005	n/a		

Table 3.11 Agrichemical Water-Quality Impact Study Water Level Data Agricultural (continued)

Ag Well Sampling Water Levels (Continued)								
Sample Site	1st Quarter Sampling		2nd Quarter Sampling		3rd Quarter Sampling		1st Quarter Sampling	
	Date	Depth to Water						
RBG-1	3/29/2005	8.6	6/8/2005	7.8	8/29/2005	7.50	3/16/2006	n/a
RBG-2	3/29/2005	10.4	6/13/2005	9.5	8/29/2005	9.25	3/16/2006	14.30
RBG-3	3/10/2005	12.0	6/13/2005	11.1	8/30/2005	11.30	3/16/2006	11.30
RBG-4	3/10/2005	11.1	6/14/2005	10.2	8/30/2005	10.30	3/16/2006	12.25
RBG-5	3/10/2005	10.5	6/14/2005	9.7	9/1/2005	9.90	3/16/2006	10.50
RBG-6	3/10/2005	10.8	6/14/2005	10.0	9/1/2005	10.20	3/16/2006	10.90
RBG-7	3/9/2005	5.1	6/15/2005	4.4	9/1/2005	4.90	3/16/2006	4.90
RBG-8	3/9/2005	5.0	6/15/2005	4.1	9/1/2005	5.75	3/16/2006	4.85
RBG-9	3/9/2005	18.55"	6/15/2005	13.1	9/6/2005	14.95	3/16/2006	19.10
RBG-10	3/10/2005	19.1	6/15/2005	13.5	9/6/2005	15.55	3/16/2006	0.00
RBS-1	3/29/2005	n/a	6/8/2005	n/a	8/25/2005	n/a		
RBS-2	3/29/2005	n/a	6/8/2005	n/a	8/29/2005	n/a		
RBS-3	3/16/2005	n/a	6/13/2005	n/a	8/29/2005	n/a		
RBS-4	3/16/2005	no water	6/13/2005	n/a	8/30/2005	n/a		
RBS-5	3/10/2005	no water	6/13/2005	n/a	8/30/2005	n/a		
RBS-6	3/10/2005	no water	6/14/2005	n/a	9/1/2005	n/a		
RBS-7	3/9/2005	n/a	6/14/2005	n/a	9/1/2005	n/a		
RBS-8	3/9/2005	n/a	6/14/2005	n/a	8/30/2005	n/a		
RBS-9	3/9/2005	no water	6/15/2005	n/a	9/7/2005	n/a		
RBS-10	3/10/2005	no water	6/15/2005	no water	9/7/2005	n/a		