Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Arapahoe Ridge fault (ARF)	**UTM central location (NAD 27)**			
	mE	**mN**		
	444353	4430285		
Sample information				
Number	**82806 1B**	**82806 2A**	**82806 2B**	**82806 3A**
Architecture/type	fw pl	mss	fw pl	clastic dike
Nonclays				
Quartz	9.1	34.0	19.1	24.6
Microcline	0.8	4.0	24.8	23.8
Orthoclase	0.0	0.0	0.1	0.0
Albite	0.0	2.5	28.0	15.2
Oligoclase	0.0	0.3	6.3	16.3
Andesine	0.0	9.4	2.1	5.9
Anorthoclase				
Total feldspar	0.8	16.1	61.4	61.3
Amphibole	--	--	--	--
Biotite	22.3	14.9	1.7	3.1
Pyroxene	0.0	0.0	0.0	0.0
Total ferromagnesian silicates	22.3	14.9	1.7	3.1
Magnetite	4.6	4.1	0.0	0.0
Hematite	--	--	--	--
Maghemite	0.9	5.2	0.0	0.0
Goethite	--	--	--	--
Total iron oxides	5.5	9.4	0.0	0.0
Ilmenite	0.0	0.0	0.0	0.0
Anatase	--	--	--	--
Rutile	--	--	--	--
Total titanium oxides	0.0	0.0	0.0	0.0
Ankerite	0.0	0.0	0.0	0.0
Calcite	0.0	0.0	0.0	0.0
Dolomite	0.3	0.0	0.0	0.0
Siderite	0.0	0.9	0.0	0.0
Total carbonates	0.3	0.9	0.0	0.0
Anhydrite	--	--	--	--
Barite	--	--	--	--
Gypsum	--	--	--	--
Jarosite	--	--	--	--
Total sulfates	0.0	0.0	0.0	0.0
Pyrite	--	--	--	--
Total sulfides	0.0	0.0	0.0	0.0
Other				
Garnet	0.1	0.5	0.0	0.1
Sillimanite	23.0	19.9	1.7	2.0
Titanite	0.0	0.0	0.0	0.0
Epidote	--	--	--	--
Apatite	0.0	1.4	0.1	0.2
Laumontite	--	--	--	--
Amorphous	--	--	--	--
Clays				
Illite/fine muscovite	17.6	0.5	14.8	7.7
Smectite	--	--	--	--
Kaolinite	9.8	1.5	0.6	1.0
Chlorite	11.6	0.7	0.6	0.0
Total clays	39.0	2.8	16.0	8.7
Full pattern degree of fit	0.1083	0.1049	0.1025	0.1129
Pre-normalized total	99.0	106.0	103.9	97.4

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Arapahoe Saddle fault (ASF)	**UTM central location (NAD 27)**							
	mE	**mN**						
	443886	4429862						
Sample information								
Number	**82306 2A**	**82306 3A**	**82306 4A**	**82306 4B**	**82306 4C**	**82306 4D**	**82306 4E**	**82306 4F**
Architecture/type	mss	pss	fw dz	pss	fw dz	fw dz	fw dz	mss
Nonclays								
Quartz	14.9	45.9	0.7	2.8	2.4	6.6	0.7	14.6
Microcline	--	--	0.6	1.3	0.0	0.1	0.0	10.8
Orthoclase	--	--	0.0	0.9	0.0	0.0	0.0	1.1
Sanidine	--	--	0.0	0.0	0.0	0.0	0.0	0.0
Albite	25.4	10.2	35.7	24.7	2.6	1.2	20.9	32.9
Oligoclase	6.8	1.3	0.0	21.4	0.0	0.0	0.0	16.1
Andesine	--	--	0.3	0.8	0.0	0.0	0.0	0.0
Anorthoclase	--	--	0.0	0.0	0.0	0.0	0.0	0.0
Total feldspar	32.2	11.5	36.6	49.1	2.6	1.3	20.9	60.9
Amphibole	--	--	0.5	0.0	0.0	0.1	2.2	0.1
Biotite	7.8	5.3	0.3	0.8	0.0	0.0	3.1	0.2
Pyroxene	--	--	--	--	--	--	--	--
Total ferromagnesian silicates	7.8	5.3	0.8	0.8	0.0	0.1	5.3	0.3
Magnetite	0.0	--	0.0	0.0	2.0	0.0	0.0	0.0
Hematite	0.2	0.0	0.6	0.2	93.0	0.0	2.1	1.5
Maghemite	0.6	3.9	0.0	0.0	0.0	0.0	8.5	0.8
Goethite	--	--	0.0	0.0	0.0	0.0	0.5	0.0
Total iron oxides	0.8	4.0	0.6	0.2	95.0	0.0	11.1	2.3
Ilmenite	0.0	0.0	0.0	0.5	0.0	0.0	1.3	0.1
Anatase	0.0	0.0	0.5	0.5	0.0	0.2	0.3	0.2
Rutile	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total titanium oxides	0.0	0.0	0.6	1.0	0.0	0.2	1.6	0.3
Ankerite	--	--	--	--	--	--	--	--
Calcite	0.5	0.2	0.1	1.3	0.0	83.1	12.4	0.9
Dolomite	--	--	0.3	0.0	0.0	0.0	1.5	2.6
Siderite	--	--	--	--	--	--	--	--
Total carbonates	0.5	0.2	0.4	1.3	0.0	83.1	14.0	3.5
Anhydrite	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Barite	0.0	0.0	0.0	--	--	--	--	--
Gypsum	0.0	0.0	0.0	0.5	0.0	0.0	1.4	0.0
Jarosite	--	--	0.0	0.0	0.0	0.2	1.4	0.2
Total sulfates	0.0	0.0	0.1	0.5	0.0	0.2	2.8	0.2
Pyrite	--	--	0.0	--	0.0	--	0.0	--
Total sulfides	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other								
Grossularite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sillimanite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Titanite	0.0	0.0	2.6	3.0	0.0	0.0	1.4	0.0
Epidote	1.4	0.0	21.4	3.1	0.0	4.5	29.8	1.5
Apatite	--	--	0.4	7.9	0.0	0.0	2.3	0.4
Laumontite	--	--	--	--	--	--	--	--
Amorphous	--	--	--	--	--	--	--	--
Clays								
Illite/fine muscovite	2.0	9.5	1.2	15.2	0.0	0.0	3.2	15.5
Smectite	5.6	4.5	0.0	0.0	0.0	0.0	2.6	0.0
Kaolinite	1.2	2.4	0.0	0.0	0.0	0.0	1.9	0.0
Chlorite	33.6	16.8	34.5	15.2	0.0	3.9	2.5	0.6
Total clays	42.4	33.2	35.7	30.4	0.0	3.9	10.3	16.1
Full pattern degree of fit	0.1909	0.1339	0.1067	0.1447	0.1115	0.1101	0.1303	0.1060
Pre-normalized total	99.6	96.5	96.2	96.8	112.7	104.7	104.1	109.0

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge; *, standardless sample. All mineral concentrations reported in weight percent]

Black Hawk Post Office fault (BHPOUTM central location (NAD 27)

	mE	**mN**
	457508	4406390
Sample information		
Number	**72606 1A***	**72606 1B***
Architecture/type	crg	dz
Nonclays		
Quartz	43.3	28.7
Potassium feldspar	4.5	54.2
Albite	11.0	12.0
Plagioclase	1.5	0.0
Total feldspar	17.0	66.2
Amphibole	0.0	0.2
Biotite	2.2	0.2
Pyroxene	--	--
Total ferromagnesian silicates	2.2	0.5
Magnetite	0.0	0.0
Hematite	0.0	0.0
Maghemite	0.0	0.7
Goethite	0.4	0.0
Total iron oxides	0.4	0.7
Ilmenite	0.0	0.0
Anatase	--	--
Rutile	--	--
Total titanium oxides	0.0	0.0
Ankerite	--	--
Calcite	0.0	0.0
Dolomite	0.9	0.0
Siderite	--	--
Total carbonates	1.0	0.0
Anhydrite	--	--
Barite	--	--
Gypsum	0.0	0.0
Jarosite	--	--
Total sulfates	0.0	0.0
Pyrite	--	--
Total sulfides	0.0	0.0
Other		
Grossularite	--	--
Sillimanite	--	--
Titanite	--	--
Epidote	0.0	1.0
Apatite	0.7	0.1
Laumontite	--	--
Amorphous	0.0	--
Clays		
Illite/fine muscovite	10.9	1.5
Smectite	5.7	1.0
Kaolinite	18.8	0.1
Chlorite	0.0	0.1
Total clays	35.4	2.7
Full pattern degree of fit	0.1388	0.0849
Pre-normalized total	na	na

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

C46 roadcut fault (C46)	**UTM central location (NAD 27)**	
	mE	**mN**
	460233	4409851
Sample information		
Number	**92404 1A**	
Architecture/type	pss	
Nonclays		
Quartz	57.4	
Potassium feldspar	36.9	
Albite	0.0	
Plagioclase	0.0	
Total feldspar	36.9	
Amphibole	--	
Biotite	0.0	
Pyroxene	0.0	
Total ferromagnesian silicates	0.0	
Magnetite	0.1	
Hematite	0.0	
Maghemite	4.0	
Goethite	0.5	
Total iron oxides	4.6	
Ilmenite	--	
Anatase	0.1	
Rutile	0.0	
Total titanium oxides	0.1	
Ankerite	--	
Calcite	0.0	
Dolomite	--	
Siderite	--	
Total carbonates	0.0	
Anhydrite	--	
Barite	--	
Gypsum	--	
Jarosite	--	
Total sulfates	0.0	
Pyrite	0.04	
Total sulfides	0.04	
Other		
Grossularite	--	
Sillimanite	--	
Titanite	--	
Epidote	--	
Apatite	0.8	
Laumontite	--	
Amorphous	--	
Clays		
Illite/fine muscovite	--	
Smectite	--	
Kaolinite	--	
Chlorite	--	
Total clays	0.0	
Full pattern degree of fit	0.1039	
Pre-normalized total	111.3	

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge; *, standardless sample. All mineral concentrations reported in weight percent]

Coal Creek fault (CCF)	**UTM central location (NAD 27)**									
	mE	**mN**								
	470435	4416947								
Sample information										
Number	**101404 1B**	**111804 1A**	**111804 2A**	**111804 2B**	**101404 1A**	**111804 2C**	**101404 1E**	**101404 1F**	**72706DJB 1A**	**101507 1B***
Architecture/type	core	hw pl	hw dz	hw dz	core	hw dz	core	fw dz	hw dz	core
Nonclays										
Quartz	48.3	27.6	30.0	28.6	70.3	29.3	40.6	23.0	25.8	71.8
Potassium feldspar	13.5	22.4	3.0	23.1	5.0	25.1	32.8	19.2	29.0	10.3
Albite	0.0	4.8	0.6	8.0	0.0	14.6	0.0	9.6	0.0	0.0
Plagioclase	0.7	31.2	0.0	23.5	0.0	13.1	0.0	9.1	0.0	0.0
Total feldspar	14.3	58.5	3.5	54.6	5.0	52.8	32.8	37.9	29.0	10.3
Amphibole	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Biotite	1.9	6.6	0.0	5.7	1.9	2.6	0.0	5.3	7.5	--
Pyroxene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Total ferromagnesian silicates	1.9	6.6	0.0	5.7	1.9	2.6	0.0	5.3	7.5	0.0
Magnetite	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Hematite	0.3	1.4	32.2	0.5	0.0	0.5	0.6	0.9	0.1	--
Maghemite	0.6	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.2	0.3
Goethite	0.4	0.5	0.7	0.3	0.5	0.1	0.6	0.6	0.8	1.1
Total iron oxides	1.5	2.2	32.9	0.8	0.5	0.7	3.7	1.5	1.2	1.4
Ilmenite	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Anatase	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
Rutile	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total titanium oxides	0.5	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1
Ankerite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Calcite	0.5	0.0	0.0	0.0	0.1	0.0	0.0	1.2	0.0	0.8
Dolomite	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Siderite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Total carbonates	0.6	0.0	0.0	0.0	0.1	0.0	0.0	1.2	0.0	0.8
Anhydrite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Barite	0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	--
Gypsum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Jarosite	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	0.1	--
Total sulfates	0.2	0.0	0.0	0.0	0.3	0.0	0.6	0.1	0.1	--
Pyrite	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	--
Total sulfides	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Other										
Grossularite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Sillimanite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Titanite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Epidote	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Apatite	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Laumontite	0.0	trace	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Amorphous	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Clays										
Illite/fine muscovite	14.9	5.1	5.2	8.3	16.2	11.6	9.8	13.3	12.3	12.1
Smectite	2.0	0.0	28.3	0.0	1.9	0.0	0.0	6.6	0.0	0.0
Kaolinite	14.8	0.0	0.0	2.0	3.7	3.0	12.4	11.1	24.1	3.4
Chlorite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Total clays	31.7	5.1	33.5	10.3	21.9	14.6	22.2	31.0	36.4	15.6
Full pattern degree of fit	0.1277	0.0922	0.1547	0.1067	0.1173	0.1069	0.1133	0.1099	0.1003	0.1793
Pre-normalized total	98.9	112.5	110.3	111.3	106.1	112.8	116.9	107.7	113.4	NA

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Central City Parkway faults (CCPF)	**UTM central location (NAD 27)**						
	mE	**mN**					
	461350	4400968					
Sample information							
Number	**121004 3A**	**121004 3B**	**121004 5B**	**121004 6A**	**121004 7A**	**121004 7B**	**121004 7C**
Architecture/Type	pl schist	pl amphib	mss	pl amphib	pl porphy	pl amphib	qtz vein
Nonclays							
Quartz	26.7	45.1	55.6	9.7	15.0	0.0	55.1
Potassium feldspar	0.0	0.7	1.6	0.1	41.8	0.0	0.0
Albite	0.0	0.6	11.5	9.8	2.42	6.7	0.0
Plagioclase	3.0	18.5	2.0	11.1	20.61	33.1	1.3
Total feldspar	3.0	19.8	15.1	21.0	64.8	39.8	1.3
Amphibole	1.2	--	--	40.5	--	--	--
Biotite	45.0	17.45	1.5	4.6	--	4.7	0.0
Pyroxene	--	--	--	--	--	--	--
Total ferromagnesian silicates	46.2	17.4	1.5	45.0	0.0	4.7	0.0
Magnetite	0.0	0.2	0.0	0.6	0.90	0.0	0.0
Hematite	2.0	0.9	0.7	2.0	0.54	0.3	0.0
Maghemite	--	0.0	0.0	0.6	0.0	0.0	0.0
Goethite	--	0.4	--	1.2	--	--	0.5
Total iron oxides	2.0	1.6	0.7	4.5	1.4	0.3	0.5
Ilmenite	0.0	0.0	0.0	0.0	0.43	0.0	0.0
Anatase	0.0	--	--	--	--	--	0.0
Rutile	--	0.13	--	0.6	0.00	--	0.2
Total titanium oxides	0.0	0.1	0.0	0.6	0.4	0.0	0.2
Ankerite	--	--	3.7	--	--	--	--
Calcite	--	0.1	--	--	--	0.0	--
Dolomite	--	--	--	--	--	0.0	--
Siderite	4.7	--	--	--	--	--	0.0
Total carbonates	4.7	0.1	3.7	0.0	0.0	0.0	0.0
Anhydrite	--	--	--	--	--	--	--
Barite	--	--	--	--	--	--	--
Gypsum	--	--	--	--	--	--	--
Jarosite	--	--	--	--	--	--	0.3
Total sulfates	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Pyrite	0.2	--	--	--	--	0.2	0.0
Total sulfides	0.2	0.0	0.0	0.0	0.0	0.2	0.0
Other							
Grossularite	--	--	--	--	--	--	--
Sillimanite	--	--	--	--	--	--	--
Titanite	--	--	--	--	--	--	--
Epidote	--	--	--	--	0.55	--	--
Apatite	--	--	--	--	2.1	0.0	--
Laumontite	--	--	--	--	--	--	--
Amorphous	--	--	--	--	--	--	--
Clays							
Illite/fine muscovite	9.3	6.95	17.8	11.2	7.14	--	42.6
Smectite	--	--	2.9	--	--	55.1	--
Kaolinite	7.8	8.87	2.7	6.3	6.76	--	0.0
Chlorite	--	--	--	1.7	1.75	--	--
Total clays	17.1	15.8	23.4	19.3	15.7	55.1	42.6
Full pattern degree of fit	0.1195	0.1008	0.1128	0.1439	0.1429	0.1002	0.1342
Pre-normalized total	100.9	104.3	101.4	104.7	102.3	100.8	103.9

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge; *, standardless sample. All mineral concentrations reported in weight percent]

Clear Creek Quary fault (CCQF)	**UTM central location (NAD 27)**				**E2 Fault, east of Coal Creek Quarry**
	mE	**mN**			**mE** / **mN**
	479026	4400325			479318 / 4400263
Sample information					
Number	**81406 1A**	**81406 1B**	**81406 1C**	**81406 1D**	**81406 3A***
Architecture/type	core	cal veins	core	fw dz	dz
Nonclays					
Quartz	30.8	1.3	26.1	79.7	82.1
Potassium feldspar	23.7	0.0	39.1	11.1	11.1
Albite	14.0	1.0	0.0	0.0	0.0
Plagioclase	20.2	0.0	0.0	0.0	0.0
Total feldspar	57.8	1.0	39.1	11.1	11.1
Amphibole	0.3	0.2	0.3	0.2	--
Biotite	2.0	0.0	0.1	0.5	--
Pyroxene	0.0	0.0	0.0	0.0	--
Total ferromagnesian silicates	2.3	0.2	0.5	0.7	0.0
Magnetite	1.3	0.0	0.1	0.0	0.0
Hematite	0.1	0.0	0.0	0.0	0.0
Maghemite	0.0	0.0	0.0	0.0	0.0
Goethite	0.0	0.0	0.1	1.6	0.0
Total iron oxides	1.4	0.0	0.2	1.6	0.0
Ilmenite	0.0	0.0	0.0	0.0	0.0
Anatase	0.2	0.0	0.3	0.0	0.0
Rutile	0.0	0.0	0.0	0.0	0.0
Total titanium oxides	0.2	0.0	0.3	0.0	0.0
Ankerite	--	--	--	--	--
Calcite	0.0	95.5	0.0	0.3	0.0
Dolomite	0.3	0.7	3.9	0.0	0.0
Siderite	--	--	--	--	--
Total carbonates	0.3	96.2	3.9	0.3	0.0
Anhydrite	0.0	0.0	0.0	0.1	--
Barite	0.0	0.0	0.6	0.2	--
Gypsum	0.2	1.0	0.7	0.6	--
Jarosite	0.0	0.0	0.0	0.3	--
Total sulfates	0.2	1.0	1.3	1.1	0.0
Pyrite	0.0	0.0	0.6	0.3	0.5
Total sulfides	0.0	0.0	0.6	0.3	0.5
Other					
Grossularite	0.0	0.0	0.0	0.0	--
Sillimanite	0.2	0.0	0.6	0.4	--
Titanite	0.0	0.0	0.0	0.1	--
Epidote	0.7	0.1	2.1	0.0	--
Apatite	0.4	0.0	0.1	0.0	0.4
Laumontite	--	--	--	--	--
Amorphous	--	--	--	--	--
Clays					
Illite/fine muscovite	2.7	0.2	16.1	3.2	0.0
Smectite	0.0	0.0	0.0	0.2	--
Kaolinite	0.0	0.0	3.3	0.0	--
Chlorite	3.0	0.0	5.8	1.1	--
Total clays	5.7	0.2	25.2	4.5	0.0
Full pattern degree of fit	0.0811	0.1378	0.1348	0.0913	0.1036
Pre-normalized total	111.3	110.0	96.0	106.9	NA

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Denver Water fault (DWF)	**UTM central location (NAD 27)**						
	mE	**mN**					
	470093	4420547					
Sample information							
Number	**80905 1A**	**80905 1B**	**80905 1C**	**80905 1D**	**80905 1E**	**80905 1F**	**80905 1G**
Architecture/type	crg	pss	core bxa	fw dz	fw dz pl	hw dz	hw pl
Nonclays							
Quartz	34.4	69.6	62.8	26.7	28.0	26.4	27.5
Microcline	12.3	6.9	19.8	21.4	26.1	24.8	12.4
Orthoclase	3.6	2.2	6.3	2.8	0.1	2.2	0.0
Albite	1.9	0.9	0.0	21.3	7.5	16.2	3.8
Oligoclase	0.0	0.0	0.0	1.1	10.8	13.3	15.1
Andesine	1.7	0.6	0.0	1.9	8.6	2.9	23.8
Total feldspar	19.5	10.7	26.1	48.4	53.1	59.3	55.1
Amphibole	0.0	0.0	0.0	0.4	0.0	0.2	0.0
Biotite	0.0	0.0	0.0	9.7	3.1	2.4	9.8
Pyroxene	--	--	--	--	--	--	--
Total ferromagnesian silicates	0.0	0.0	0.0	10.1	3.1	2.6	9.8
Magnetite	0.2	0.1	0.2	0.0	0.1	0.0	0.8
Hematite	1.2	0.5	0.7	0.3	0.5	0.5	0.0
Maghemite	--	--	--	--	--	--	--
Goethite	0.5	--	--	--	0.3	0.1	0.8
Total iron oxides	1.9	0.5	1.0	0.3	0.8	0.6	1.6
Ilmenite	--	--	--	--	--	--	--
Anatase	0.0	0.0	0.0	0.1	0.2	0.1	0.3
Rutile	0.0	0.0	0.0	0.0	0.0	0.3	0.1
Total titanium oxides	0.0	0.0	0.0	0.1	0.2	0.4	0.3
Ankerite	--	--	--	--	--	--	--
Calcite	0.0	0.0	0.2	0.0	0.3	0.1	0.2
Dolomite	--	--	--	--	--	--	--
Siderite	--	--	--	--	--	--	--
Total carbonates	0.0	0.0	0.2	0.0	0.3	0.1	0.2
Other							
Grossularite	--	--	--	--	--	--	--
Sillimanite	--	--	0.0	--	--	--	--
Titanite	0.3	--	--	--	--	--	--
Epidote	--	--	--	--	2.2	0.3	--
Apatite	--	--	--	--	--	--	--
Laumontite	--	--	--	--	--	--	--
Amorphous	--	--	--	--	--	--	--
Anhydrite	--	--	--	--	--	--	--
Barite	--	--	--	--	--	--	--
Gypsum	--	--	--	--	--	--	--
Jarosite	--	--	--	--	--	--	--
Total sulfates	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pyrite	--	--	--	--	--	--	--
Total sulfides	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clays							
Illite/fine muscovite	25.9	6.9	5.5	14.4	5.7	6.0	5.4
Smectite	--	--	--	--	--	--	--
Kaolinite	18.3	12.2	4.4	0.0	4.0	4.3	--
Chlorite	--	--	--	--	2.7	--	--
Total clays	44.2	19.1	9.9	14.4	12.3	10.2	5.4
Full pattern degree of fit	0.0913	0.0823	0.1233	0.0969	0.0967	0.1051	0.1106
Pre-normalized total	109.9	109.0	116.2	117.0	111.6	102.6	111.5

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Forrest Dump fault (FDF)	**UTM central location (NAD 27)**							
	mE	**mN**						
	462602	4423040						
Sample information								
Number	**80806 1A**	**80806 1B**	**80806 1C**	**80806 1D**	**80806 1E**	**80806 1F**	**80806 1G**	**80806 1H**
Architecture/type	fw pl	fw dz	fw dz	core	core	core	hw dz	hw pl
Nonclays								
Quartz	50.2	61.2	62.6	54.8	45.5	16.3	21.6	37.1
Potassium feldspar	34.3	24.3	22.5	17.9	12.0	37.0	31.0	49.1
Albite	0.0	0.0	0.0	0.0	0.0	0.0	13.1	0.0
Plagioclase	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0
Total feldspar	34.3	24.3	22.5	17.9	12.0	37.0	45.8	49.1
Amphibole	0.0	0.1	0.0	0.2	0.7	0.0	0.0	0.0
Biotite	0.5	0.1	0.3	0.2	0.6	0.6	1.0	0.0
Pyroxene	0.0	0.1	0.1	1.0	0.3	0.8	0.0	0.0
Total ferromagnesian silicates	0.5	0.3	0.4	1.5	1.6	1.4	1.0	0.0
Magnetite	0.1	0.0	0.1	0.0	0.0	0.5	0.5	0.0
Hematite	0.9	0.1	1.1	2.3	4.0	4.0	1.3	0.8
Maghemite	0.0	0.7	0.0	1.1	2.2	0.3	0.2	0.0
Goethite	0.0	2.9	0.5	0.2	0.8	1.0	1.5	0.3
Total iron oxides	1.1	3.7	1.7	3.7	6.9	5.8	3.5	1.1
Ilmenite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Anatase	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Rutile	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total titanium oxides	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Ankerite	0.1	0.0	0.2	0.0	0.0	0.2	0.0	0.1
Calcite	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dolomite	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Siderite	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total carbonates	0.1	0.1	0.2	0.0	0.0	0.2	0.1	0.1
Anhydrite	0.0	0.0	0.1	0.4	0.1	0.1	0.4	0.0
Barite	0.1	0.2	0.3	0.3	0.3	0.1	0.0	0.3
Gypsum	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0
Jarosite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total sulfates	0.1	0.3	0.4	0.7	0.4	0.3	0.4	0.3
Pyrite	0.1	0.1	0.1	0.0	0.0	0.2	0.2	0.0
Total sulfides	0.1	0.1	0.1	0.0	0.0	0.2	0.2	0.0
Other								
Grossularite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sillimanite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Titanite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Epidote	0.0	0.0	0.0	0.0	0.0	0.6	0.7	0.0
Apatite	0.0	0.0	0.0	0.2	0.8	0.7	0.6	0.0
Laumontite	--	--	--	--	--	--	--	--
Amorphous	--	--	--	--	--	--	--	--
Clays								
Illite/fine muscovite	2.1	2.7	2.8	3.7	4.7	13.9	14.4	0.0
Smectite	0.0	0.0	0.0	0.0	1.1	0.0	0.3	0.0
Kaolinite	11.6	7.2	9.2	17.5	27.0	23.5	11.3	12.3
Chlorite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total clays	13.6	10.0	12.0	21.3	32.7	37.4	26.0	12.3
Full pattern degree of fit	0.096	0.099	0.116	0.114	0.134	0.114	0.084	0.159
Pre-normalized total	106.2	105.8	99.8	99.9	96.6	97.7	105.7	99.4

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw; hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Forrest Dump fault, north (FDFN)	**UTM central location (NAD 27)**				
	mE	**mN**			
	462590	4423067			
Sample information					
Number	**80906 2A**	**80906 2B**	**80906 2C**	**80906 2D**	**80906 2E**
Architecture/type	crg	crg	fw dz	fw dz	fw dz
Nonclays					
Quartz	72.9	29.8	5.2	17.3	9.4
Microcline	6.2	18.6	12.1	78.5	84.8
Orthoclase	0.1	0.2	1.0	0.0	0.0
Albite	0.0	0.0	38.5	0.0	0.0
Oligoclase	0.0	0.0	0.0	0.0	0.0
Andesine	0.0	0.0	1.7	0.0	0.0
Anorthoclase	0.0	0.0	0.1	0.0	0.0
Total feldspar	6.4	18.8	53.4	78.5	84.8
Amphibole	--	--	--	--	--
Biotite	0.5	0.1	0.3	0.0	0.0
Pyroxene	--	--	--	--	--
Total ferromagnesian silicates	0.5	0.1	0.3	0.0	0.0
Magnetite	--	--	--	--	--
Hematite	2.2	4.4	2.0	2.0	3.2
Maghemite	0.5	0.5	0.3	0.0	0.0
Goethite	0.7	1.0	0.3	0.0	0.0
Total iron oxides	3.4	5.8	2.5	2.0	3.2
Ilmenite	0.0	0.3	0.0	0.6	0.7
Anatase	0.0	0.1	0.1	0.0	0.1
Rutile	--	--	--	--	--
Total titanium oxides	0.0	0.4	0.1	0.6	0.8
Ankerite	0.1	0.3	0.3	0.3	1.0
Calcite	0.0	0.0	15.0	0.1	0.0
Dolomite	0.0	0.0	0.3	0.0	0.0
Siderite	0.0	0.0	0.0	0.0	0.0
Total carbonates	0.1	0.3	15.6	0.5	1.0
Anhydrite	--	--	--	--	--
Barite	0.05	0.3	0.0	0.0	0.0
Gypsum	0.26	0.0	1.1	0.0	0.0
Jarosite	--	--	--	--	--
Total sulphates	0.31	0.29	1.14	0.00	0.00
Pyrite	--	--	--	--	--
Total sulfides	0.0	0.0	0.0	0.0	0.0
Other					
Grossularite	--	--	--	--	--
Sillimanite	--	--	--	--	--
Titanite	--	--	--	--	--
Epidote	0.0	0.0	0.0	0.0	0.0
Apatite	0.1	0.7	0.8	0.0	0.7
Laumontite	--	--	--	--	--
Amorphous	--	--	--	--	--
Clays					
Illite/fine muscovite	9.4	23.7	15.8	1.2	0.0
Smectite	--	--	--	--	--
Kaolinite	6.9	20.0	4.7	0.0	0.0
Chlorite	0.0	0.0	0.5	0.0	0.0
Total clays	16.3	43.7	21.0	1.2	0.0
Full pattern degree of fit	0.1051	0.1007	0.1081	0.1057	0.1064
Pre-normalized total	107.7	94.0	104.3	103.3	103.7

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Gregory fault-vein (GFV)	**UTM central location (NAD 27)**							
	mE	**mN**						
	457335	4405605						
Sample information								
Number	**81006 1A**	**81006 1B**	**81006 1C**	**81006 1E**	**81006 1F**	**81006 1G**	**81006 1H**	**81006 1I**
Architecture/type	fw pl	fw dz	fw dz	core	pss	core	hw dz	hw pl
Nonclays								
Quartz	31.0	35.6	45.1	60.3	65.5	67.3	43.0	38.9
Potassium feldspar	2.7	3.5	12.4	0.4	0.9	0.0	19.1	5.8
Albite	0.0	6.5	0.0	0.0	0.0	0.0	9.1	0.0
Plagioclase	55.1	43.7	0.0	0.0	0.0	0.0	11.2	49.3
Total feldspar	57.8	53.6	12.4	0.4	0.9	0.0	39.4	55.1
Amphibole	0.0	0.0	0.5	0.0	0.4	0.0	0.0	0.0
Biotite	10.2	7.0	0.7	0.3	1.2	0.0	1.5	4.6
Pyroxene	0.3	0.4	0.0	0.0	0.0	0.5	0.2	0.0
Total ferromagnesian silicates	10.5	7.4	1.2	0.3	1.7	0.5	1.7	4.6
Magnetite	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Hematite	0.1	0.8	0.0	0.0	0.0	0.0	0.8	0.5
Maghemite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Goethite	0.0	0.0	0.2	0.2	1.3	0.4	0.0	0.1
Total iron oxides	0.1	0.8	0.2	0.2	1.3	1.0	0.8	0.8
Ilmenite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Anatase	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0
Rutile	0.5	0.2	0.2	0.2	0.0	0.1	0.0	0.6
Total titanium oxides	0.5	0.2	0.3	0.3	0.0	0.2	0.1	0.6
Ankerite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calcite	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Dolomite	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Siderite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total carbonates	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Anhydrite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gypsum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jarosite	0.0	0.0	1.9	0.7	5.7	18.7	0.2	0.0
Total sulfates	0.0	0.0	1.9	0.7	5.7	18.7	0.2	0.0
Pyrite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total sulfides	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Other								
Grossularite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sillimanite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Titanite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Epidote	0.0	0.0	0.3	--	0.0	--	--	--
Apatite	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
Laumontite	--	--	--	--	--	--	--	--
Amorphous	--	--	--	--	--	--	--	--
Clays								
Illite/fine muscovite	0.0	1.2	37.0	37.5	22.3	12.2	11.6	0.0
Smectite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kaolinite	0.0	1.2	0.6	0.3	0.0	0.0	2.5	0.0
Chlorite	0.0	0.0	0.9	0.0	2.0	0.0	0.6	0.0
Total clays	0.0	2.4	38.6	37.8	24.3	12.2	14.7	0.0
Full pattern degree of fit	0.0956	0.0999	0.0989	0.1202	0.1121	0.1034	0.0968	0.1211
Pre-normalized total	102.9	105.8	101.6	105.1	103.2	104.7	101.9	106.1

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Guy Hill School fault zone (GHFZ)	**UTM central location (NAD 27)**									
	mE	**mN**								
	474318	4403551								
Sample information										
Number	**80306 1A**	**80306 1B**	**80306 1C**	**80306 1D**	**80306 1E**	**80306 1F**	**80306 1G**	**80303 1L**	**80306 1M**	**80306 1N**
Architecture/type	fw mss	fw pss	hw mss	core	fw dz	fw pl	hw dz	fw dz	hw dz	hw pl
Nonclays										
Quartz	21.9	32.0	21.9	34.8	19.8	25.3	26.6	8.7	13.6	7.5
Potassium feldspar	14.4	37.1	47.3	36.3	55.1	34.1	26.9	0.1	58.0	49.1
Albite	18.0	24.5	19.9	11.6	20.6	35.9	39.8	0.0	27.4	40.7
Plagioclase	18.4	3.3	2.3	1.9	0.2	1.5	2.8	0.7	0.2	1.8
Total feldspar	50.8	64.9	69.5	49.8	76.0	71.5	69.4	0.8	85.6	91.6
Amphibole	0.2	--	0.0	0.2	0.0	0.0	0.4	1.5	0.0	0.2
Biotite	2.4	0.5	1.2	1.5	2.3	1.0	0.6	14.0	0.6	0.1
Pyroxene	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total ferromagnesian silicates	2.6	0.5	1.2	1.8	2.3	1.0	0.9	15.5	0.6	0.3
Magnetite	0.1	0.0	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0
Hematite	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Maghemite	1.1	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0
Goethite	0.2	0.2	0.1	0.5	0.0	0.0	0.0	0.5	0.0	0.0
Total iron oxides	2.00	0.18	0.29	0.58	0.25	0.04	0.04	2.73	0.03	0.10
Ilmenite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Anatase	0.2	--	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Rutile	0.0	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total titanium oxides	0.18	0.00	0.00	0.00	0.04	0.00	0.00	0.65	0.00	0.06
Ankerite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Calcite	0.0	0.0	0.0	0.0	1.0	0.0	0.0	40.2	0.0	0.0
Dolomite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Siderite	0.0	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total carbonates	0.0	0.0	0.0	0.0	1.0	0.0	0.0	40.2	0.0	0.1
Anhydrite	0.4		--	--	--	--	--	--	--	--
Barite	0.0	0.0	--	--	--	--	--	--	--	--
Gypsum	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Jarosite	0.0	--	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Total sulphates	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Pyrite	0.08	--	0.0	0.0	0.0	0.1	0.0	0.2	0.01	0.0
Total sulfides	0.08	0.00	0.00	0.00	0.00	0.06	0.00	0.22	0.01	0.00
Other										
Grossularite	0.0	0.0	--	--	--	--	--	--	--	--
Sillimanite	0.1	0.0	--	--	--	--	--	--	--	--
Titanite	0.7	--	--	--	--	--	--	--	--	--
Epidote	3.0	0.0	0.3	0.3	0.2	0.0	0.1	1.0	0.2	0.3
Apatite	0.4	--	0.0	0.0	0.2	0.0	0.0	2.8	0.0	0.0
Laumonite	--	--	--	--	--	--	--	--	--	--
Amorphous	--	--	--	--	--	--	--	--	--	--
Clays										
Illite/fine muscovite	11.1	1.8	3.5	5.7	0.0	2.1	2.8	6.4	0.0	0.0
Smectite	0.0	--	0.8	3.3	0.0	0.0	0.0	4.7	0.0	0.0
Kaolinite	1.5	0.6	2.5	3.7	0.2	0.0	0.0	5.3	0.0	0.0
Chlorite	4.6	0.0	0.0	0.0	0.0	0.0	0.0	10.4	0.0	0.0
Total clays	17.3	2.3	6.8	12.7	0.2	2.1	2.8	26.9	0.0	0.0
Full pattern degree of fit	0.0978	0.1	0.1139	0.1107	0.1252	0.1238	0.0975	0.1184	0.0939	0.0786
Pre-normalized total	111.7	113.9	100.5	99.3	112.5	119.3	104.7	92.1	106.7	106.6

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Gross Reservior breccia dike (GRB	**UTM central location (NAD 27)**			
	mE	**mN**		
	471005	4420203		
Sample information				
Number	**80805 6A**	**80805 6C**	**80805 6D**	**80805 6E**
Architecture/type	core	dz vein	fw vein	hw dz
Nonclays				
Quartz	39.6	17.4	43.8	21.9
Potassium feldspar	46.6	30.0	24.6	25.9
Albite	0.0	12.6	8.1	4.9
Plagioclase	0.0	3.7	0.0	0.4
Total feldspar	46.6	46.3	32.7	31.1
Amphibole	--	--	--	--
Biotite	1.9	2.5	2.1	1.9
Pyroxene	--	--	--	--
Total ferromagnesian silicates	1.9	2.5	2.1	1.9
Magnetite	0.0	0.0	0.0	0.0
Hematite	2.2	0.8	0.8	1.1
Maghemite	0.0	0.1	0.0	0.0
Goethite	1.2	1.8	10.5	0.1
Total iron oxides	3.4	2.7	11.2	1.2
Ilmenite	0.1	0.0	0.1	0.0
Anatase	--	--	--	--
Rutile	0.2	0.0	0.0	0.0
Total titanium oxides	0.4	0.0	0.1	0.0
Ankerite	0.1	0.0	0.0	0.0
Calcite	0.0	0.3	0.3	0.1
Dolomite	0.0	0.0	0.0	0.0
Siderite	0.0	0.0	0.0	0.0
Total carbonates	0.1	0.3	0.3	0.1
Anhydrite	0.2	0.8	0.2	0.6
Barite	0.4	0.1	0.4	0.4
Gypsum	0.3	0.3	0.0	0.1
Jarosite	--	--	--	--
Total sulfates	0.9	1.2	0.6	1.1
Pyrite	--	--	--	--
Total sulfides	0.0	0.0	0.0	0.0
Other				
Grossularite	--	--	--	--
Sillimanite	--	--	--	--
Titanite	--	--	--	--
Epidote	0.0	0.0	0.0	0.3
Apatite	0.6	0.2	0.0	0.3
Laumontite	--	--	--	--
Amorphous	--	--	--	--
Clays				
Illite/fine muscovite	6.1	17.4	0.5	23.9
Smectite	0.0	9.0	8.0	9.8
Kaolinite	0.5	3.0	0.5	8.3
Chlorite	--	--	--	--
Total clays	6.6	29.4	9.1	42.0
Full pattern degree of fit	0.1360	0.1147	0.1059	0.0925
Pre-normalized total	111.2	110.5	104.9	105.7

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Handcart Gulch outcrop and drill core samples (HCG)	**UTM central location (NAD 27) mE**	**mN**													
	428456	4375777													
Sample information															
Number	**73004 1A**	**72904 1A**	**101004 3**	**WP1 85**	**WP1 102**	**WP1 617**	**WP1 1022**	**WP1 1173**	**HCBW1 49**	**HCBW1 98**	**HCBW3 29**	**HCBW3 47**	**HCBW3 74**	**HCBW3-167**	**HCBW4-61**
Architecture/type	schist pl	fw pl felsite	porphyry pl	drill core	drill core	drill core	drill core	drill core	drill core	drill core	drill core	drill core	drill core	drill core	drill core
Nonclays															
Quartz	28.7	31.0	62.7	65.8	67.7	40.3	23.9	42.1	0.0	16.1	58.3	88.3	20.8	61.4	52.3
Potassium feldspar	--	0.0	--	--	--	--	14.6	1.0	--	--	3.0	0.0	3.8	0.5	17.1
Albite	--	0.0	--	--	--	--	2.2	--	--	--	--	0.0	--	0.0	10.2
Plagioclase	--	0.0	--	--	--	--	20.8	--	32.5	1.6	0.7	0.0	--	0.7	0.5
Total feldspar	0.0	0.0	0.0	0.0	0.0	0.0	37.6	1.0	32.5	1.6	3.7	0.0	3.8	1.1	27.8
Amphibole	0.0	0.0	--	--	--	--	0.2	--	39.3	0.7	--	--	--	--	--
Biotite	0.0	--	--	--	--	--	5.1	--	8.6	3.4	--	--	9.6	--	3.3
Pyroxene	--	0.0	--	--	--	--	--	--	--	--	--	--	--	--	--
Total ferromagnesian silicates	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	47.8	4.2	0.0	0.0	9.6	0.0	3.3
Magnetite	0.0	0.0	--	0.6	1.0	0.0	0.5	0.0	7.1	0.0	0.0	0.0	--	0.0	--
Hematite	1.4	0.0	--	0.3	0.2	0.4	0.3	0.4	--	--	0.0	0.0	0.3	--	0.0
Maghemite	1.2	0.0	--	--	--	--	3.7	3.4	--	0.5	5.8	0.5	2.7	6.6	0.3
Goethite	--	--	--	4.1	0.4	0.7	0.2	0.5	--	--	3.8	0.0	1.2	0.0	0.0
Total iron oxides	2.6	0.0	0.0	5.0	1.5	1.1	4.6	4.3	7.1	0.5	9.5	0.5	4.1	6.6	0.3
Ilmenite	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anatase	0.0	0.0	--	--	--	--	0.0	0.0	--	--	0.2	0.0	--	0.0	0.0
Rutile	0.5	0.5	0.5	1.0	1.8	1.0	0.3	0.8	--	--	0.2	0.0	--	0.0	0.0
Total titanium oxides	0.5	0.5	0.5	1.0	1.8	1.0	0.3	0.8	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Ankerite	0.0	0.0	--	--	--	--	--	--	--	--	--	--	--	--	0.0
Calcite	0.0	0.0	--	--	--	--	0.6	--	--	1.4	--	0.0	0.2	0.9	0.3
Dolomite	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Siderite	0.0	0.0	--	--	--	--	--	--	--	--	--	0.1	--	0.0	0.0
Total carbonates	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	1.4	0.0	0.1	0.2	0.9	0.3
Anhydrite	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.3
Barite	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gypsum	--	--	--	--	--	--	--	--	0.6	--	--	--	0.3	--	0.0
Jarosite	--	--	2.0	0.0	0.0	0.8	0.5	1.0	--	--	--	0.0	--	0.3	--
Total sulphates	0.0	0.0	2.0	0.0	0.0	0.8	0.5	1.0	0.6	0.0	0.0	0.0	0.3	0.3	0.3
Pyrite	0.4	0.5	--	0.5	0.5	8.3	1.7	13.5	2.0	8.5	0.2	0.1	4.7	3.5	4.8
Total sulfides	0.4	0.5	0.0	0.5	0.5	8.3	1.7	13.5	2.0	8.5	0.2	0.1	4.7	3.5	4.8
Other															
Grossularite	--	--	--	--	--	--	--	--	--	5.4	--	--	1.0	--	--
Sillimanite	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanite	--	--	--	1.0	0.2	0.3	0.7	0.0	0.0	3.3	0.0	--	--	0.0	0.9
Epidote	--	--	--	--	--	--	--	--	0.9	12.2	--	--	--	--	--
Apatite	0.0	0.0	--	--	--	--	--	--	--	--	0.6	--	2.5	--	--
Laumontite	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sillimanite	5.5	8.9	--	--	--	--	--	--	--	0.2	--	--	--	--	--
Pyrophyllite	--	--	--	--	0.1	--	--	--	--	--	--	8.2	--	--	1.6
Amorphous	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Clays															
Illite/fine muscovite	57.6	53.6	34.9	26.7	23.9	35.9	10.7	35.8	--	5.3	27.4	2.6	22.7	18.8	8.4
Smectite	--	--	--	--	--	--	1.7	--	--	31.8	--	--	2.9	--	--
Kaolinite	4.7	5.5	--	--	4.3	0.0	4.2	1.4	--	7.3	--	0.2	19.7	7.5	--
Chlorite	--	--	--	--	--	12.3	8.2	--	9.1	2.2	--	--	7.5	--	--
Total clays	62.3	59.1	34.9	26.7	28.2	48.2	24.8	37.2	9.1	46.7	27.4	2.8	52.8	26.3	8.4
Full pattern degree of fit	0.1312	0.1233	0.1024	0.1377	0.1341	0.0926	0.1054	0.1350	0.1276	0.1411	0.1111	0.2191	0.1183	0.1241	0.1380
Pre-normalized total	108.8	106.6	99.9	97.1	102.2	103.0	112.4	97.4	109.8	99.9	108.8	103.2	113.2	97.5	113.9

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Hoosier fault (HF)	**UTM central location (NAD 27)**						
	mE	**mN**					
	470289	4428327					
Sample information							
Number	**120804 1A**	**120804 1B**	**120804 1C**	**120804 1D**	**120804 1F**	**120804 1G**	**1406DJB 1A**
Architecture/type	hw dz	hw dz	core	core	fw dz	fw dz	fw pl
Nonclays							
Quartz	19.7	32.0	54.3	8.3	19.6	19.4	30.6
Potassium feldspar	20.7	45.2	0.0	0.0	19.7	17.8	20.5
Albite	13.9	0.0	0.0	0.0	15.5	20.3	6.9
Plagioclase	16.6	1.6	0.0	0.0	14.1	11.8	24.6
Total feldspar	51.2	46.8	0.0	0.0	49.3	49.9	52.0
Amphibole	0.3	0.0	0.0	0.0	0.0	0.3	1.5
Biotite	5.5	0.0	0.0	0.0	3.6	9.2	7.5
Pyroxene	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total ferromagnesian silicates	5.8	0.0	0.0	0.0	3.6	9.5	9.0
Magnetite	0.0	0.0	0.0	0.0	0.2	0.2	1.7
Hematite	0.8	1.7	0.8	0.0	0.8	0.5	0.0
Maghemite	1.1	2.1	0.0	2.4	0.0	1.8	0.0
Goethite	0.2	1.6	0.0	0.7	0.5	0.5	0.0
Total iron oxides	2.1	5.3	0.8	3.2	1.5	3.0	1.7
Ilmenite	0.0	0.0	0.0	0.0	0.2	0.0	0.6
Anatase	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rutile	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total titanium oxides	0.0	0.0	0.0	0.0	0.2	0.0	0.6
Ankerite	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calcite	0.0	0.2	4.1	68.1	6.7	2.8	0.0
Dolomite	0.0	6.2	0.0	0.1	0.0	0.0	0.0
Siderite	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total carbonates	0.0	6.4	4.1	68.2	6.7	2.8	0.0
Anhydrite	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barite	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gypsum	0.0	1.7	0.0	0.0	0.0	0.0	0.0
Jarosite	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total sulphates	0.0	1.7	0.0	0.0	0.0	0.0	0.0
Pyrite	--	--	--	--	--	--	--
Total sulfides	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other							
Grossularite	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sillimanite	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Titanite	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Epidote	1.5	1.1	0.0	0.0	0.6	1.2	1.0
Apatite	0.0	0.0	0.0	0.0	0.8	0.0	0.0
Laumontite	--	--	--	--	--	--	--
Amorphous	--	--	--	--	--	--	--
Clays							
Illite/fine muscovite	6.5	6.6	40.8	20.3	11.6	4.5	5.0
Smectite	3.0	0.0	0.0	0.0	2.4	3.5	0.0
Kaolinite	4.0	0.0	0.0	0.0	3.6	1.4	0.0
Chlorite	6.1	0.0	0.0	0.0	0.0	4.8	0.0
Total clays	19.6	6.6	40.8	20.3	17.7	14.1	5.0
Full pattern degree of fit	0.1305	0.0828	0.1137	0.1139	0.1208	0.0790	0.0893
Pre-normalized total	114.0	104.4	91.7	102.8	110.9	114.8	107.9

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

James Peak Mammoth faults (JPM UTM central location (NAD 27)

	mE	**mN**					
	440836	4411583					
Sample information							
Number	**81105 2A**	**81105 3A**	**81105 4A**	**81105 5A**	**81105 6A**	**81105 7A**	**81105 8A**
Architecture/type	ese pl	center	wnw pl	e pl	center	fe ox pl	west pl
Nonclays							
Quartz	39.2	32.1	62.9	27.2	25.7	50.8	26.8
Potassium feldspar	3.3	43.6	5.5	15.0	44.8	1.1	34.3
Albite	2.4	1.8	1.4	0.4	12.0	3.3	18.1
Plagioclase	40.2	3.2	6.2	10.4	4.2	19.5	6.0
Total feldspar	45.9	48.6	13.0	25.8	61.0	24.0	58.5
Amphibole	--	--	--	--	--	--	--
Biotite	7.8	3.2	9.6	22.1	0.8	6.5	1.5
Pyroxene	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total ferromagnesian silicates	7.8	3.2	9.6	22.1	0.8	6.5	1.5
Magnetite	0.0	0.0	0.8	3.1	0.5	0.1	0.2
Hematite	0.3	0.5	0.1	0.4	0.2	2.2	0.0
Maghemite	0.0	0.0	0.5	1.7	0.0	1.9	0.0
Goethite	0.2	0.4	0.4	0.4	0.3	0.9	0.5
Total iron oxides	0.5	0.9	1.7	5.6	1.0	5.1	0.7
Ilmenite	0.0	0.1	0.0	0.0	0.0	0.1	0.0
Anatase	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rutile	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total titanium oxides	0.01	0.14	0.00	0.00	0.00	0.11	0.00
Ankerite	0.0	0.5	0.0	0.0	0.1	0.0	0.0
Calcite	0.0	0.3	0.0	0.1	0.2	0.0	0.0
Dolomite	0.0	0.0	0.1	1.2	0.0	0.0	0.0
Siderite	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total carbonates	0.0	0.8	0.1	1.3	0.3	0.0	0.0
Anhydrite	--	--	--	--	--	--	--
Barite	0.2	0.2	0.4	0.5	0.2	0.2	0.3
Gypsum	0.2	0.4	0.3	0.2	0.4	0.3	0.4
Jarosite	--	--	--	--	--	--	--
Total sulphates	0.4	0.6	0.7	0.7	0.6	0.5	0.7
Pyrite	--	--	--	--	--	--	--
Total sulfides	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other							
Grossularite	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Sillimanite	--	--	--	--	--	--	--
Titanite	--	--	--	--	--	--	--
Epidote	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Apatite	0.0	0.3	0.0	0.0	0.0	0.4	0.0
Laumontite	--	--	--	--	--	--	--
Bassanite	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Amorphous	--	--	--	--	--	--	--
Clays							
Illite/fine muscovite	2.9	10.6	6.3	11.1	7.9	9.5	9.4
Smectite	--	--	--	--	--	--	--
Kaolinite	2.6	2.5	2.1	4.6	2.2	2.5	1.8
Chlorite	0.8	0.3	3.4	1.3	0.4	0.7	0.7
Total clays	6.2	13.4	11.8	17.0	10.5	12.7	11.9
Full pattern degree of fit	0.0978	0.0875	0.1194	0.1282	0.0880	0.0974	0.0955
Pre-normalized total	107.1	104.6	106.5	110.3	105.0	107.8	111.0

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM = Universal Transverse Mercator, NAD = North America Datum, mE = meters east, mN = meters north, pss = principal slip surface, pl = protolith, dz = damage zone, fw = footwall, hw = hanging wall, na = not available, mss = minor slip surface, crg = clay-rich gouge. All mineral concentrations reported in weight percent]

Junction Ranch Fault at Golden Gate (JRGG)	**UTM Central Location (NAD 27)**	
	mE	**mN**
	464943	4408340
Sample Information		
Number	**72706 1A**	**72706 1B**
Architecture/Type	pss	hw dz
Non-Clays		
Quartz	32.5	41.5
Potassium Feldspar	37.0	13.6
Albite	20.8	16.5
Plagioclase	8.1	18.9
Total Feldspar	65.9	49.0
Amphibole	0.0	0.0
Biotite	0.9	4.4
Pyroxene	--	--
Total Ferromagnesian Silicates	0.9	4.4
Magnetite	0.2	0.1
Hematite	--	--
Maghemite	0.0	0.0
Goethite	0.2	0.3
Total Iron Oxides	0.4	0.4
Ilmenite	0.0	0.0
Anatase	--	--
Rutile	--	--
Total Titanium Oxides	0.0	0.0
Ankerite	--	--
Calcite	0.2	0.0
Dolomite	0.0	0.0
Siderite	--	--
Total Carbonates	0.2	0.0
Anhydrite	--	--
Barite	--	--
Gypsum	0.0	0.0
Jarosite	--	--
Total Sulphates	0.0	0.0
Pyrite	--	--
Total Sulfides	0.0	0.0
Other		
Grossularite	--	--
Sillimanite	--	--
Titanite	--	--
Epidote	0.0	0.2
Apatite	0.0	0.0
Laumontite	--	--
Amorphous	--	--
Clays		
Illite/Fine Muscovite	0.0	1.3
Smectite	0.0	0.0
Kaolinite	0.0	3.2
Chlorite	--	--
Total Clays	0.0	4.5
Full Pattern Degree of Fit	0.0850	0.0768
Pre-Normalized Total	101.9	102.3

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Junction Ranch fault at Huntsman Gulch (JRHG)	**UTM central location (NAD 27) mE**	**mN**								
	475081	4399287								
Sample information										
Number	**81406 8B**	**81406 8C**	**81406 8D**	**81406 8A**	**81406 8E**	**81406 8F**	**81406 8G**	**81406 8H**	**100307 1A**	**100307 1B**
Architecture/type	fw dz	core	core	core	fw dz	fw dz	hw dz	hw dz	core	core
Nonclays										
Quartz	49.3	31.7	45.1	9.5	38.7	33.4	18.0	20.2	44.5	35.5
Potassium feldspar	11.9	8.2	21.7	3.9	21.7	50.8	71.2	34.1	16.1	11.2
Albite	0.0	0.0	0.0	2.5	15.7	0.0	0.0	24.7	0.0	0.0
Plagioclase	0.0	0.0	0.0	0.1	0.6	0.0	0.0	4.9	0.0	0.0
Total feldspar	11.9	8.2	21.7	6.6	38.0	50.8	71.2	63.7	16.1	11.2
Amphibole	0.8	0.6	0.4	0.5	0.3	0.0	0.0	0.4	--	--
Biotite	1.8	0.4	2.3	0.7	0.5	0.1	0.2	2.1	2.9	0.4
Pyroxene	--	--	--	--	--	--	--	--	--	--
Total ferromagnesian silicates	2.6	1.0	2.6	1.1	0.8	0.1	0.2	2.5	2.9	0.4
Magnetite	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.4
Hematite	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Maghemite	0.5	0.0	0.0	1.4	0.1	0.0	0.0	0.0	0.4	2.4
Goethite	0.7	0.4	0.4	0.2	0.3	0.2	0.6	0.5	0.5	0.3
Total iron oxides	1.2	0.4	0.4	1.6	0.6	0.2	0.6	0.5	0.8	2.7
Ilmenite	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Anatase	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1
Rutile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Total titanium oxides	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.0	0.2	0.1
Ankerite	--	--	--	--	--	--	--	--	--	--
Calcite	1.8	34.0	0.4	71.8	4.0	0.5	0.5	0.0	0.2	13.7
Dolomite	0.8	0.5	0.7	0.3	9.1	7.7	1.0	0.0	2.2	0.7
Siderite	--	--	--	--	--	--	--	--	0.0	0.0
Total carbonates	2.6	34.5	1.0	72.1	13.2	8.2	1.4	0.0	2.4	14.3
Anhydrite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
Barite	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	--	--
Gypsum	0.6	1.2	0.0	3.1	1.5	2.7	2.2	0.2	0.3	0.0
Jarosite	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.0	--	--
Total sulphates	0.7	1.2	0.3	3.6	1.6	2.7	2.2	0.4	0.3	0.0
Pyrite	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.0	--	--
Total sulfides	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.0	0.0	0.0
Other										
Grossular garnet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
Sillimanite	1.6	0.8	1.3	0.0	1.1	0.0	0.0	0.0	--	--
Titanite	0.0	0.0	1.1	0.3	0.9	1.3	0.0	0.0	--	--
Epidote	0.6	0.0	0.2	0.0	0.9	0.8	1.0	0.0	--	--
Apatite	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0
Laumontite	--	--	--	--	--	--	--	--	--	--
Amorphous	--	--	--	--	--	--	--	--	--	--
Clays										
Illite/fine muscovite	10.3	5.8	12.0	0.7	2.4	0.0	3.5	2.3	23.0	11.3
Smectite	8.5	15.0	5.8	3.7	0.1	0.0	0.0	8.4	4.2	19.2
Kaolinite	10.1	1.4	7.1	0.0	0.3	0.0	0.0	1.2	2.9	3.6
Chlorite	0.4	0.0	1.2	1.2	1.6	2.6	1.8	0.4	2.6	1.3
Total clays	29.3	22.2	26.2	5.6	4.2	2.6	5.3	12.3	32.7	35.5
Full pattern degree of fit	0.0978	0.1353	0.0975	0.1575	0.1354	0.1819	0.1674	0.0918	0.1269	0.1192
Pre-normalized total	93.4	89.9	97.8	100.8	101.7	105.2	105.8	105.1	103.5	101.9

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge; *, standardless sample. All mineral concentrations reported in weight percent]

Junction Ranch fault at US40 Paradise Hills (JRPH)	**UTM central location (NAD 27)**					
	mE	**mN**				
	476504	4395392				
Sample information						
Number	**91602 1B***	**91602 1C***	**91602 1D***	**91602 1E***	**91602 1F***	**91602 1G***
Architecture/type	pss	dz	dz	dz	dz	dz
Nonclays						
Quartz	35.8	3.5	43.9	89.9	38.4	40.3
Potassium feldspar	38.0	16.8	4.9	0.9	5.6	25.9
Albite	0.8	22.5	16.6	2.9	18.0	5.6
Plagioclase	0.0	44.9	20.5	0.3	0.0	3.5
Total feldspar	38.8	84.1	42.0	4.1	23.6	35.1
Amphibole	--	--	--	--	--	--
Biotite	1.9	0.7	2.0	0.0	2.8	4.4
Pyroxene	0.0	0.4	0.2	0.0	0.0	0.0
Total ferromagnesian silicates	1.9	1.1	2.1	0.0	2.8	4.4
Magnetite	0.0	0.2	0.0	0.0	0.0	0.2
Hematite	0.0	1.2	0.7	0.0	0.8	1.5
Maghemite	0.6	1.3	0.7	0.6	3.3	2.2
Goethite	7.1	0.4	0.3	0.8	17.3	1.3
Total iron oxides	7.8	3.1	1.8	1.4	21.4	5.2
Ilmenite	0.0	0.1	0.0	0.0	0.4	0.0
Anatase	--	--	--	--	--	--
Rutile	--	--	--	--	--	--
Total titanium oxides	0.0	0.1	0.0	0.0	0.4	0.0
Ankerite	0.5	0.0	0.0	0.0	0.0	0.2
Calcite	0.0	0.0	0.0	0.1	0.0	0.0
Dolomite	0.0	0.0	0.0	0.0	0.0	0.0
Siderite	0.0	0.0	0.0	0.0	0.0	0.0
Total carbonates	0.5	0.0	0.0	0.1	0.0	0.2
Anhydrite	--	--	--	--	--	--
Barite	--	--	--	--	--	--
Gypsum	--	--	--	--	--	--
Jarosite	--	--	--	--	--	--
Total sulphates	0.0	0.0	0.0	0.0	0.0	0.0
Pyrite	--	--	--	--	--	--
Total sulfides	0.0	0.0	0.0	0.0	0.0	0.0
Other						
Grossularite	0.3	0.1	0.1	0.0	0.4	0.1
Sillimanite	--	--	--	--	--	--
Titanite	--	--	--	--	--	--
Epidote	0.0	0.1	0.0	0.0	0.0	0.1
Apatite	0.6	0.1	0.0	0.1	0.3	0.4
Laumontite	--	--	--	--	--	--
Forsterite	0.8	0.4	0.3	0.0	0.2	0.2
Amorphous	--	--	--	--	--	--
Clays						
Illite/fine muscovite	13.4	5.7	8.5	4.2	11.7	10.7
Smectite	--	--	--	--	--	--
Kaolinite	0.0	1.6	1.3	0.2	0.8	3.3
Chlorite	--	--	--	--	--	--
Total clays	13.4	7.3	9.8	4.4	12.5	14.0
Full pattern degree of fit	0.1427	0.0861	0.0903	0.0937	0.1118	0.1252
Pre-normalized total	na	na	na	na	na	na

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Livingston fault at Bull Gulch and Harris (LF)	**Bull Gulch: UTM central location (NAD 27)**					**Fischer: UTM central location (NAD 27)**			
	mE	**mN**					**mE**	**mN**	
	474792	4417103					465697	4429689	
Sample information									
Number	**81905 1A**	**81905 2B**	**81905 2C**	**81905 2D**	**81905 2E**	**81905 2F**	**81805 1A**	**81805 3A**	**101504 1**
Architecture/Type	ddz	hw dz	hw dz cnt	hw dz	fw core	core	pss	fw pl db	vein core
Nonclays									
Quartz	90.2	87.2	92.26	68.0	78.8	19.0	83.7	96.3	27.7
Potassium feldspar	0.8	0.0	1.95	4.5	14.2	42.4	--	--	53.5
Albite	0.0	0.0	0.05	--	--	--	--	--	--
Plagioclase	0.2	0.0	0.63	--	--	--	--	--	--
Total feldspar	1.0	0.0	2.6	4.5	14.2	42.4	0.0	0.0	53.5
Amphibole	--	--	--	--	--	--	--	--	--
Biotite	--	--	--	--	--	--	--	--	--
Pyroxene	--	--	--	--	--	--	--	--	--
Total ferromagnesian silicates	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Magnetite	0.0	0.0	0.1	0.0	0.0	0.0	--	--	--
Hematite	0.3	0.5	0.41	2.1	0.72	0.00	--	--	0.2
Maghemite	0.1	0.0	--	--	--	--	4.3	--	3.1
Goethite	--	0.6	--	--	--	0.00	1.5	0.1	0.1
Total iron oxides	0.4	1.1	0.5	2.1	0.7	0.0	5.9	0.1	3.5
Ilmenite									--
Anatase	0.0	0.1	--	0.1	--	--	--	--	0.1
Rutile	0.0	0.0	--	--	--	--	--	--	--
Total titanium oxides	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Ankerite	--	--	--	--	--	--	--	--	--
Calcite	0.0	0.0	0.10	--	--	0.00	--	--	--
Dolomite	--	--	--	--	--	--	--	--	--
Siderite	0.0	0.0	--	--	--	--	--	--	--
Total carbonates	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Anhydrite	--	--	--	--	--	--	--	--	--
Barite	--	--	--	--	--	--	--	--	--
Gypsum	--	--	--	--	--	--	--	--	--
Jarosite	0.3	0.0	--	--	--	--	--	0.0	--
Total sulphates	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pyrite	--	--	--	--	--	--	--	--	--
Total sulfides	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other									
Grossularite	--	--	--	--	--	--	--	--	--
Sillimanite	--	--	--	--	--	--	--	--	--
Titanite	--	--	--	--	1.36	0.00	--	--	--
Epidote	--	--	--	--	--	--	--	--	--
Apatite	--	--	--	--	--	--	--	--	--
Laumontite	--	--	--	--	--	--	--	--	--
Svanbergite	--	--	--	--	--	--	--	--	0.7
Amorphous	--	--	--	--	--	--	--	--	--
Clays									
Illite/fine muscovite	1.9	11.6	3.95	25.2	4.0	38.5	8.2	--	10.3
Smectite	--	--	--	--	--	--	--	--	--
Kaolinite	6.2	--	0.52	--	0.8	0.00	2.2	3.6	4.3
Chlorite	--	--	--	--	--	--	--	--	--
Total clays	8.1	11.6	4.5	25.2	4.9	38.5	10.4	3.6	14.6
Full pattern degree of fit	0.1369	0.1227	0.1080	0.1556	0.1539	0.1185	0.1008	0.1097	0.1268
Pre-normalized total	104.7	102.9	111.5	97.6	103.6	108.3	104.3	115.7	102.5

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Maxwell fault at Boulder Creek and Four Mile Canyon (MF)	**Boulder Creek: UTM central location (NAD 27)**						**Four Mile: UTM central location (NAD 27)**		
	mE	**mN**						**mE**	**mN**
	472424	4429219						472370	4429331
Sample information									
Number	**81806 1A**	**81806 1B**	**81806 1C**	**81806 1D**	**81806 1E**	**81806 1F**	**81806 1G**	**82406 1A**	**82406 1B**
Architecture/type	core	core	hw dz	fw pl	core	fw dz	hw pl	pss	dz vein
Nonclays									
Quartz	19.8	18.1	28.6	21.5	11.3	2.3	18.0	19.4	21.1
Microcline	--	--	--	--	--	--	--	19.7	18.3
Orthoclase	--	--	--	--	--	--	--	0.3	0.9
Potassium feldspar	5.8	23.8	33.3	20.4	46.3	61.3	22.1	20.0	19.2
Albite	0.0	8.6	21.5	16.1	0.0	0.0	14.1	32.0	27.9
Oligoclase	--	--	--	--	--	--	--	8.3	11.7
Andesine	--	--	--	--	--	--	--	0.0	0.0
Anorthoclase	--	--	--	--	--	--	--	0.0	1.1
Unspecified plagioclase	--	0.4	3.1	5.5	--	--	18.2	--	--
Plagioclase	0.0	9.0	24.6	21.6	0.0	0.0	32.2	40.3	40.7
Total feldspar	5.8	32.8	57.8	42.0	46.3	61.3	54.3	60.3	59.8
Amphibole	1.4	0.0	0.0	0.5	0.0	0.1	0.4	0.4	0.0
Biotite	1.2	1.2	0.6	1.6	0.3	0.0	10.0	0.0	0.1
Pyroxene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total ferromagnesian silicates	2.6	1.3	0.6	2.1	0.3	0.1	10.3	0.4	0.1
Magnetite	0.2	0.0	0.2	0.0	0.0	0.0	0.5	0.0	0.0
Hematite	2.0	0.7	0.4	0.5	1.3	1.3	0.5	0.7	0.8
Maghemite	1.3	0.3	0.0	1.3	2.2	1.8	1.0	0.0	0.0
Goethite	0.0	0.3	0.1	0.8	0.0	0.0	0.0	0.1	0.1
Total iron oxides	3.5	1.3	0.7	2.6	3.5	3.1	2.0	0.8	0.9
Ilmenite	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.5	0.5
Anatase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rutile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total titanium oxides	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.5	0.5
Ankerite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9
Calcite	4.0	0.3	0.5	0.2	0.2	0.0	0.6	0.0	0.0
Dolomite	2.4	18.5	0.0	4.0	26.0	25.8	0.2	9.8	5.0
Siderite	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total carbonates	6.3	18.8	0.5	4.1	26.2	25.8	0.7	9.8	11.9
Anhydrite	0.0	0.2	0.4	0.2	0.6	0.0	0.1	0.0	0.0
Barite	0.2	0.2	0.2	0.1	0.0	0.3	0.0	0.0	0.1
Gypsum	0.9	0.4	0.0	0.0	1.7	1.5	0.5	0.3	0.0
Jarosite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--
Total sulphates	1.1	0.7	0.6	0.3	2.3	1.8	0.6	0.3	0.1
Pyrite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
Total sulfides	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other									
Grossularite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sillimanite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Titanite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Epidote	1.1	1.8	0.0	1.4	2.3	1.7	0.5	2.2	0.2
Apatite	0.0	0.8	0.1	0.2	1.1	0.4	0.6	0.7	0.0
Laumontite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
Amorphous	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
Clays									
Illite/fine muscovite	45.7	18.6	4.6	20.5	3.1	2.4	8.4	4.5	4.1
Smectite	7.8	4.6	0.0	3.6	0.0	0.0	0.7	0.0	--
Kaolinite	4.2	0.2	0.2	0.0	1.2	0.0	0.3	0.6	0.6
Chlorite	2.1	0.9	6.3	1.8	2.1	1.1	3.6	0.5	0.6
Total clays	59.8	24.3	11.1	25.8	6.4	3.5	13.0	5.6	5.3
Full pattern degree of fit	0.11292	0.10734	0.07600	0.09019	0.15282	0.13020	0.10285	0.1353	0.0973
Pre-normalized total	101.8	112.7	103.4	109.9	109.0	108.9	113.4	108.3	104.2

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Peak to Peak adit fault (P2P)	**UTM central location (NAD 27)**									
	mE	**mN**								
	456169	4430094								
Sample information										
Number	**81005 2A**	**81005 2C**	**81005 2D**	**81005 2E**	**81005 2F**	**81005 2G**	**81005 2H**	**81005 2L**	**81005 2M**	**81005 2N**
Architecture/type	core	fw dz	fw dz	core	hw dz	hw dz	hw pl	fw pl	fw pl	hw dz
Nonclays										
Quartz	58.9	62.6	14.8	80.5	50.4	48.2	12.6	29.1	32.5	32.0
Potassium feldspar	7.5	5.3	6.9	3.9	4.6	4.6	38.6	42.0	2.0	9.2
Albite	0.0	0.0	48.5	0.0	0.0	0.0	7.7	5.1	1.3	14.7
Plagioclase	0.0	0.0	0.0	0.0	0.0	0.7	26.0	7.4	13.7	17.2
Total feldspar	7.5	5.3	55.4	3.9	4.6	5.3	72.3	54.5	17.0	41.0
Amphibole	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--
Biotite	0.0	0.0	0.2	0.0	0.0	3.1	1.7	2.0	16.4	0.9
Pyroxene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total ferromagnesian silicates	0.0	0.0	0.2	0.0	0.0	3.1	1.7	2.0	16.4	0.9
Magnetite	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	3.1	0.0
Hematite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maghemite	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Goethite	0.0	0.0	0.0	0.5	18.3	6.2	0.3	0.1	0.1	0.1
Total iron oxides	0.0	0.0	1.4	0.5	18.3	6.2	0.5	0.1	3.5	0.1
Ilmenite	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0
Anatase	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--
Rutile	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--
Total titanium oxides	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0
Ankerite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Calcite	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Dolomite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Siderite	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--
Total carbonates	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.0
Anhydrite	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--
Barite	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.4	0.3	0.1
Gypsum	0.0	0.0	0.0	0.0	0.0	0.4	1.0	0.6	0.3	0.2
Jarosite	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--
Total sulphates	0.0	0.0	0.0	0.0	0.0	0.9	1.3	1.0	0.6	0.3
Pyrite	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--
Total sulfides	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other										
Grossularite	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Sillimanite	0.0	0.0	0.2	0.0	0.0	2.9	1.7	2.1	6.7	0.9
Titanite	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--
Epidote	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.2
Apatite	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--
Laumontite	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--
Amorphous	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--
Clays										
Illite/Fine Muscovite	33.6	32.1	19.6	11.9	26.7	26.7	5.0	6.8	11.9	20.8
Smectite	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--
Kaolinite	0.0	0.0	8.4	3.1	0.0	2.1	3.1	3.0	4.9	3.1
Chlorite	0.0	0.0	0.0	0.0	0.0	4.5	1.3	1.3	5.7	0.8
Total clays	33.6	32.1	28.0	15.1	26.7	33.3	9.5	11.1	22.6	24.7
Full pattern degree of fit	0.1107	0.0812	0.0942	0.0888	0.1365	0.1270	0.0856	0.0906	0.0895	0.0913
Pre-normalized total	108.9	103.7	108.9	108.8	111.2	110.4	107.5	106.8	104.3	106.9

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Peak 8818, Hurricane Hill fault (P8818	**UTM central location (NAD 27)**	
	mE	**mN**
	459505	4422253
Sample information		
Number	**101204 1A**	**101204 1C**
Architecture/type	breccia	breccia
Nonclays		
Quartz	30.0	22.8
Potassium feldspar	53.7	61.5
Albite	0.0	0.0
Plagioclase	0.0	0.0
Total feldspar	53.7	61.5
Amphibole	--	--
Biotite	--	--
Pyroxene	--	--
Total ferromagnesian silicates	0.0	0.0
Magnetite	0.2	0.1
Hematite	0.0	2.2
Maghemite	3.0	3.2
Goethite	0.6	0.5
Total iron oxides	3.9	6.0
Ilmenite	--	--
Anatase	0.0	0.3
Rutile	--	0.0
Total titanium oxides	0.0	0.3
Ankerite	--	--
Calcite	0.6	0.2
Dolomite	--	--
Siderite	--	--
Total carbonates	0.6	0.2
Anhydrite	--	--
Barite	--	--
Gypsum	--	--
Jarosite	0.4	0.2
Total sulphates	0.4	0.2
Pyrite	--	--
Total sulfides	0.0	0.0
Other		
Grossularite	--	--
Sillimanite	--	--
Titanite	--	--
Epidote	--	--
Apatite	--	--
Laumontite	--	--
Amorphous	--	--
Clays		
Illite/fine muscovite	5.8	6.1
Smectite	--	--
Kaolinite	5.5	2.9
Chlorite	--	--
Total clays	11.3	8.9
Full pattern degree of fit	0.1241	0.1392
Pre-normalized total	107.7	112.5

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Short Cut Gulch fault (SCG)	**UTM central location (NAD 27)**				
	mE	**mN**			
	470290	4431871			
Sample information					
Number	**81806 3A**	**81806 3B**	**81806 3C**	**81806 3G**	**81806 3D**
Architecture/type	hw pl	hw dz	fw dz	hw pl	fw pl
Nonclays					
Quartz	19.1	11.0	20.9	20.0	15.2
Potassium feldspar	20.0	20.7	11.4	14.6	0.0
Albite	28.1	36.0	31.6	28.6	29.0
Plagioclase	3.6	1.9	5.0	0.0	2.4
Total feldspar	51.6	58.6	48.0	43.2	31.4
Amphibole	0.3	0.0	0.3	0.2	0.0
Biotite	2.4	1.4	2.4	0.7	1.2
Pyroxene	--	--	--	--	--
Total ferromagnesian silicates	2.7	1.4	2.7	0.9	1.2
Magnetite	0.9	1.2	0.4	0.0	0.0
Hematite	3.1	4.5	1.0	0.5	0.1
Maghemite	0.0	0.3	0.0	0.0	0.5
Goethite	0.0	0.0	0.0	0.0	0.0
Total iron oxides	4.0	6.0	1.4	0.5	0.6
Ilmenite	0.0	0.0	0.0	0.0	0.0
Anatase	--	--	--	0.2	0.9
Rutile	--	--	--	0.0	0.3
Total titanium oxides	0.0	0.0	0.0	0.2	1.2
Ankerite	--	--	--	--	--
Calcite	0.0	0.0	0.0	0.5	0.3
Dolomite	0.4	0.2	0.0	0.3	0.0
Siderite	0.2	0.0	0.2	0.0	0.0
Total carbonates	0.6	0.3	0.2	0.8	0.3
Anhydrite	0.8	0.6	0.5	0.9	0.0
Barite	0.1	0.0	0.1	0.0	0.0
Gypsum	0.0	0.0	0.1	0.0	0.0
Jarosite	0.0	0.0	0.0	0.0	0.0
Total sulphates	1.0	0.7	0.6	0.9	0.0
Pyrite	--	--	--	0.0	0.0
Total sulfides	0.0	0.0	0.0	0.0	0.0
Other					
Grossularite	--	--	--	--	--
Sillimanite	--	--	--	--	--
Titanite	0.0	0.0	0.0	0.0	0.0
Epidote	0.0	0.0	0.5	31.1	0.0
Apatite	0.6	1.1	0.2	0.3	0.0
Laumontite	--	--	--	--	--
Amorphous	--	--	--	--	--
Clays					
Illite/Fine Muscovite	7.7	9.3	10.3	0.0	1.0
Smectite	0.8	0.6	1.8	0.0	0.0
Kaolinite	1.3	1.2	0.8	0.0	0.5
Chlorite	10.7	9.8	12.6	2.1	48.6
Total clays	20.5	20.9	25.5	2.1	50.1
Full pattern degree of fit	0.0754	0.0875	0.0819	0.1186	0.1169
Pre-normalized yotal	99.8	108.8	107.5	107.8	93.3

Table 2. Front Range fault and fault-vein semiquantitative XRD mineralogy.—Continued

[UTM, Universal Transverse Mercator; NAD, North America Datum; mE, meters east; mN, meters north; pss, principal slip surface; pl, protolith; dz, damage zone; fw, footwall; hw, hanging wall; na, not available; mss, minor slip surface; crg, clay-rich gouge. All mineral concentrations reported in weight percent]

Sugarloaf-Peak to Peak fault (SP2PUTM central location (NAD 27)

	mE	**mN**
	457762	4426913
Sample information		
Number	**81005 1A**	**81005 1B**
Architecture/type	vein	pss
Nonclays		
Quartz	16.0	15.8
Potassium feldspar	9.9	2.5
Albite	0.0	6.3
Plagioclase	0.0	17.4
Total feldspar	9.9	26.2
Amphibole	--	0.0
Biotite	--	1.5
Pyroxene	0.9	0.0
Total ferromagnesian silicates	0.9	1.5
Magnetite	--	0.0
Hematite	0.0	0.1
Maghemite	0.0	0.0
Goethite	0.0	0.4
Total iron oxides	0.0	0.4
Ilmenite	0.0	0.4
Anatase	--	--
Rutile	--	--
Total titanium oxides	0.0	0.4
Ankerite	7.8	23.2
Calcite	17.7	0.4
Dolomite	1.6	1.1
Siderite	41.5	0.0
Total carbonates	68.7	24.8
Anhydrite	--	0.6
Barite	--	0.3
Gypsum	--	0.2
Jarosite	--	--
Total sulphates	0.0	1.1
Pyrite	--	0.0
Total sulfides	0.0	0.0
Other		
Grossularite	--	0.0
Sillimanite	--	0.5
Titanite	--	--
Epidote	--	--
Apatite	--	1.1
Laumontite	--	--
Amorphous	--	--
Clays		
Illite/fine muscovite	4.6	24.6
Smectite	--	--
Kaolinite	--	3.6
Chlorite	--	0.0
Total clays	4.6	28.2
Full pattern degree of fit	0.0895	0.1261
Pre-normalized total	105.3	114.3