UA SCIENCE
ARIZONA
GEOLOGICAL SURVEY

1955 E 6th St.
Tucson, AZ 85721
https://azgs.arizona.edu/
(520) 621-2470

Drill core data for the Red Mountain porphyry copper-molybdenum system, Harshaw mining district, Patagonia Mountains, Santa Cruz County, Arizona

Arizona Geological Survey Open-File Report 25-4

Recommended Citation:

Mako, C. A., Holman, B. I., Fairbanks, K. J., Foley, A. P., and Richardson, C. A., 2025, Drill core data for the Red Mountain porphyry copper-molybdenum system, Harshaw mining district, Patagonia Mountains, Santa Cruz County, Arizona: Arizona Geological Survey Open-File Report 25-4.

Description:

Red Mountain in Patagonia, AZ hosts a porphyry copper-molybdenum deposit with a history of substantial exploration drilling. Drill data including logs, assay results, and geologic maps, as well as skeletonized drill core, were donated to the Arizona Geological Survey in 2004. This repository includes all available original drilling data, scanned and made available as PDFs, as well as tabulated data in spreadsheets.

Tabulated digital data and other products related to this document are available at:
http://hdl.handle.net/10150/676938

This work was funded by the United States Geological Survey National Geological and Geophysical Data Preservation Program, G23AP00215.

KERR-McGEE CORPORATION

District Harshaw - Red Mountain
Hole Number DDH-142
Spudded 27 January 1971
Completed 14 July 1971
Total Depth 5229'
Driller Joy Mfg. - L. Machen
Logged By R. Ahern

County Santa Cruz State Arizona
Claim ______ Sec 19 T. 22S R. 16E
Elevation 5256'
Hole Size NC 0-1374; NX 1374-3083'; BX 3083-5229'
Core Size NC 0-1374; NX 1374-3083'; BX 3083-5229'
Hole Angle Vertical
Collar Coords. ~~865,996.86~~ N. 185,607
~~185,601.27~~ E. 865,969

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
0								Trachyte	Tan to reddish brown	Phyllic alteration, quartz-	Oxidized and leached, with limonite after
								Tuff	cut by numerous thin	sericite-pyrite, supergene	pyrite disseminated and along fractures;
30	30	100%	17882	.01					quartz veinlets. Black	clay.	minor limonite after chalcocite from
									hematite-quartz veins		7' to 15'.
									at 7', 12', 29', and		
									30'.		
									Breccia at 45-50'.		Jarosite along quartz-vein at 46'.
57.5	27.5	100%	17883	.01					Grey to pink, quartz	Quartz-sericite-alunite	Unoxidized, but bleached, very minor
									veinlets and numerous	with minor clay.	chalcocite coating pyrite; pyrite
60	2.5	100%	18409	.08					sulfide veinlets.		disseminated in sericite and in quartz-
											alunite veins; also pyrite veinlets.
65	5	100%	18401	.11							
70	5	100%	18408	.09				Tuff	Large tuff fragments	Massive alunite replacing	Some finely disseminated pyrite, massive
								Breccia	cut by veinlets, some	30% of rock. Occasional	pyrite in 1/8" veinlets.
75	5	100%	18402	.05					offsetting others.	black quartz veins.	
80	5	100%	18410	.04					Mottled appearing with	Alunite-sericite-quartz.	
									more numerous quartz		
85	5	100%	18403	.15					veins.		
90	5	100%	18411	.08					Occasional fragments		First prominent chalcocite tarnish noted
									of monzonite porphyry.		at 92'.
95	5	100%	18412	.05							Sooty chalcocite and tarnish in pyrite
											veinlets.
100	5	100%	18413	.14							Prominent quartz-pyrite veinlets with
											moderate amounts of chalcocite.

District Harshaw - Red Mountain **Hole Number** DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
105	5	100%	18404	.36				Tuff	Grey, mottled with	Alunite-sericite-pyrite	Pyrite disseminated in quartz matrix and
								Breccia	large soft fragments	with minor clay; tourmaline	along vertical quartz veins; increasing
110	5	100%	18414	.17					in a siliceous matrix.	at 110'.	chalcocite on pyrite; prominent quartz-
											pyrite-chalcocite vein at 112-114'.
115	5	100%	18405	.22							
120	5	100%	18415	.26				Trachyte	Grey to pink with oc-	Banding adjacent to vein-	
								Tuff and	casional 1" fragments	lets appears to be super-	
125	5	100%	18416	.11				Tuff Brec-	of dark grey siliceous	gene bleaching.	More abundant chalcocite replacing pyrite
								cia.	material. Occasional		and in quartz-pyrite veinlets at 128',
130	5	100%	18417	.39					fragments of monzonite		132', 135', and 139'. Some sooty chal-
									porphyry.		cocite and disseminated pyrite; strong
135	5	100%	18418	.55							molybdenite-quartz vein at 128'.
140	5	100%	18419	.32					143'- Black quartz		
									pyrite vein banded with		
145	5	100%	18406	.48					round inclusions of		
									sericitized tuff, looks		
150	5	100%	18420	.30					"fluidized".		
155	5	100%	18421	.27							
160	5	100%	18422	.42					2" quartz-pyrite vein		
									at 162'.		
165	5	100%	18423	.31							
170	5	100%	18424	.16							
175	5	100%	18407	.17							
180	5	100%	18425	.21				Tuff	1" quartz-pyrite vein	Quartz-sericite-pyrite with	Chalcocite coating fine-grained pyrite in
								Breccia	at 180'.	moderate amounts of alunite.	veinlets. Coatings appear to be thin.
185	5	100%	18426	.28							Pyrite and quartz-pyrite veinlets are
											numerous.
190	5	100%	18427	.18							
195	5	100%	18428	.17							
200	5	100%	18429	.23							

District Harshaw - Red Mountain   Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Assays Mo	Rock Type	Rock Description	Alteration	Mineralization
202						Trachyte	Pinkish grey, apparently	Quartz-sericite-pyrite	Pyrite and quartz-pyrite veinlets less
205	5	100%	18430	.16		Tuff	unbrecciated.	clay, only minor alunite.	common; fine-grained pyrite disseminated
									throughout is fresh; chalcocite replacing
210	5	100%	18431	.24					vein pyrite only.
215	5	100%	18432	.22				Alunite more abundant	
								below 214'.	
220	5	100%	18433	.22					
225	5	100%	18434	.34					
230	5	100%	18435	.32					
							Fault gouge at 232'.		
235	5	100%	18436	.43					
240	5	100%	18437	.38					
245	5	100%	18438	.26					
250	5	100%	18439	.35			Pyrite vein offsetting		Vertical shear from 261' contains moderate
							quartz-pyrite vein at		visible chalcocite along pyrite fracture
							257'.		fillings; total chalcocite content
260	10	100%	18452	.10					reduced below shear, confined to occasion-
									al zones of replacement along thin pyrite
270	10	100%	18453	.16					veinlets and on minor disseminated pyrite.
280	10	100%	18454	.12					
286						Tuff	Quartz-sulfide veins	Quartz-sericite-clay-pyrite.	
						Breccia	more abundant.		
290	10	100%	18455	.16					
296						Tuff and		Fragments replaced by clay-	1 or 2 quartz-pyrite veinlets per foot;
						Tuff		sericite in matrix of	chalcocite coating disseminated pyrite.
300	10	100%	18456	.14		Breccia		alunite.	

District Harshaw - Red Mountain | Hole Number DDH-142 | Page Number 4

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
310	10	100%	18457	.14				~~Breccia~~ of Tuff and Monzonite Porphyry	Fragments of chert in one foot zone at 311'; prominent quartz-pyrite vein at 320'	Quartz-sericite-pyrite with alunite and clay.	Pyrite veinlets cut through breccia fragments, only minor chalcocite tarnish on pyrite. Several vertical pyrite veinlets at 326 and 330'.
320	10	100%	18458	.12							
330	10	100%	18459	.11							
340	10	100%	18460	.10				~~Breccia~~	Monzonite porphyry and tuff.	Phenocrysts altered to sericite and clay, groundmass to quartz and alunite.	Occasional sooty chalcocite replacing pyrite disseminated along fractures.
350	10	100%	18461	.09							
352								Monzonite? ~~Breccia~~	Occasional fragments of tuff.		
360	10	100%	18462	.08							
370	10	100%	18463	.08							
374								Shear Zone			Prominent chalcocite replacing pyrite along shear.
376								Tuff Breccia	Occasional monzonite porphyry fragments.	Quartz-sericite-pyrite-clay-alunite.	
380	10	100%	18464	.17							
383								Monzonite? ~~Breccia~~			Occasional pyrite veinlets with only rare chalcocite tarnish.
390	10	100%	18465	.08							
398								Trachyte Tuff	Grey to pink with quartz veinlets common.	Quartz-sericite-alunite.	Pyrite disseminated along fractures and in occasional 1/8" veinlets; chalcocite coating fine-grained pyrite locally.
400	10	100%	18466	.17							

District Harshaw - Red Mountain　　Hole Number DDH-142　　Page Number 5

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Assays Mo			Rock Type	Rock Description	Alteration	Mineralization
410	10	100%	18467	.13				Tuff and	Grey to pink, cut by	Quartz-sericite-pyrite with	Pyrite veinlets and minor disseminated
								Tuff	numerous hairline	alunite, gouge zone at 417'	pyrite.
420	10	100%	18468	.10				Breccia	fractures and occasion-	filled with pyrite-clay-	
									al quartz-sulfide veins.	sericite.	
430	10	100%	18469	.08							Vertical 1/4" pyrite veinlet at 329'.
											Shear zone with chalcocite replacing
437									Occasional fragments of		pyrite at 433'.
									monzonite porphyry.		
440	10	100%	18470	.13							
449											Pyrite veinlets more abundant, criss-
											crossing quartz-pyrite veinlets 1 or 2
450	10	100%	18471	.04							times per foot.
460	10	100%	18472	.06				Monzonite(?)			
								Porphyry			
470	10	100%	18473	.09							Prominent quartz vein at 471'. Only
											occasional black spots of chalcocite
											coating pyrite.
480	10	100%	18474	.05							
487								Tuff	Occasional fragments		
								Breccia	of monzonite porphyry.		Quartz-pyrite-alunite veinlet at 489'
											shows good chalcocite replacement.
490	10	100%	18475	.12							
										Radiating aggregates of	
										tourmaline.	
500	10	100%	18476	.13							Chalcocite replacing finely disseminated
											pyrite at 500-502'.

District Harshaw - Red Mountain   Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
510	10	100%	18477	.06				Tuff Breccia	Pink to medium grey, monzonite fragments, cut by numerous quartz veinlets.	Quartz-sericite-pyrite-alunite.	Black quartz-pyrite veinlets contain minor chalcocite.
520	10	100%	18478	.08							
530	10	100%	18479	.12							
535								Quartz	Massive quartz vein containing disseminated sulfides and occasional tuff fragments.	Quartz-sericite-pyrite-clay.	Minor disseminated pyrite in tuff coated by chalcocite. Pyrite veinlets exhibit minor chalcocite replacement.
540	10	100%	18480	.28							
550	10	100%	18481	.34							
553									Tuff equals quartz.		
559									Mostly quartz with minor tuff.	Extreme quartz alteration with remainder of rock altered to sericite and clay.	5-7% finely disseminated pyrite with numerous 1/4" pyrite veinlets.
560	10	100%	18482	.27							
570	10	100%	18483	.14							
575								Tuff Breccia	Light-grey, tuff fragments surrounded by quartz and cut by quartz-pyrite veinlets.	Quartz-sericite-pyrite alteration is complete; original rock is totally obliterated.	Quartz-pyrite veinlets occasionally exhibit tiny specks of bornite.
580	10	100%	18484	.14							
587								Porphyry?	Medium grey, coarse-grained; no mafics; original mineralogy completely obscurred. Clay-sericite phenocrysts in a quartz groundmass.	Quartz-sericite-pyrite with alunite and clay.	Pyrite and quartz-pyrite veins and stringers with 7 to 10% finely disseminated sulfides. Very minor bornite associated with prominent quartz pyrite vein at 599'.
590	10	100%	18485	.18							
600	10	100%	18486	.12							

District Harshaw-Red Mountain **Hole Number** DDH-142 **Page Number** 7

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
602						Tuff	Light grey to pink, fine-	Quartz-sericite-pyrite	Pyrite 7-10% with scattered specks of
							grained; cut by very	alteration completely re-	bornite and minor sooty chalcocite in
610	10	100%	18487	.25			numerous quartz, quartz-	places original rock	pyrite.
							pyrite, and pyrite	minerals; minor alunite.	
620	10	100%	18488	.32			stringers and $\frac{1}{4}$" vein-		
							lets.		
621							Veinlets less numerous	Quartz-sericite-alunite.	3-5% pyrite disseminated and in veinlets.
							than above.		
627						Tuff	Medium grey to pink	ALUNITE-quartz-sericite	3-5% pyrite with occasional specks of
						Breccia	fine-grained, cut by	with alunite in veins and	sooty chalcocite replacing pyrite.
630	10	100%	18489	.17			alunite, quartz, and	replacing former tuff	
							pyrite veinlets.	fragments.	
632						Tuff	Light grey, fine to	ALUNITE-quartz-sericite-	Minor sooty chalcocite coating fine-
							medium-grained; horse-	pyrite with $\frac{1}{4}$" alunite	grained disseminated pyrite.
640	10	100%	18490	.14			tailing or feathering	borders along some quartz-	
							of quartz vein noted at	pyrite veins.	
650	10	100%	18491	.13			647'; $\frac{1}{2}$" quartz-pyrite		
							vein at 653'. Occasional		
660	10	100%	18402	.09			parallel families of		
							quartz-pyrite veins.		
670	10	100%	18493	.18					
675						Monzonite(?)	Mottled pink tuff frag-	ALUNITE-quartz-sericite-	3% pyrite disseminated mostly in breccia
						Porphyry(?)	ments in light grey	pyrite and clay; tuff matrix	matrix; numerous quartz-pyrite veinlets;
680	10	100%	18494	.10		~~Breccia~~	siliceous matrix cut by	replaced by alunite; feld-	scattered sooty specks of chalcocite
							frequent quartz, pyrite	spar altered to sericite	coating fine-grained pyrite.
							and alunite veinlets,	and clay with quartz veining	
							and numerous hairline	and silica flooding breccia	Chalcocite more abundant below 685'.
690	10	100%	18495	.15			stringers in tuff frag-	matrix.	associated with abundant $\frac{1}{4}$" quartz veins.
							ments.		
700	10	100%	18496	.16					
									Prominent 1" quartz-pyrite vein at 708'.

District Harshaw - Red Mountain   Hole Number DDH-142   Page Number 8

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
710	10	100%	18497	.11		Monzonite(?) Porphyry(?) ~~Breccia~~	Includes tuff fragments.	QUARTZ-ALUNITE, sericite-pyrite and clay.	Fine-grained disseminated pyrite and massive quartz-pyrite vein which carrys minor sooty chalcocite at 712'.
715							Numerous thin hairline quartz and pyrite veins.	Quartz-sericite-alunite-pyrite. Intense quartz flooding 725-727'.	Scattered sooty chalcocite on disseminated fine-grained pyrite.
720	10	100%	18498	.17					
727						Monzonite(?) Porphyry	Feldspar phenocrysts in fine-grained groundmass cut by numerous thin quartz-pyrite veinlets.	Quartz-sericite-pyrite with clay, replaces former feldspar.	Minor chalcocite coatings on pyrite disseminated along fractures.
730	10	100%	18499	.13					
734						Tuff and Tuff Breccia	Occasional fragments of monzonite porphyry.	SERICITE-CLAY-ALUNITE with quartz and pyrite veinlets surrounded by quartz-sericite envelopes.	
740	10	100%	18500	.09					
750	10	100%	18501	.06					
757						Tuff Breccia	More intense brecciation and veining.		Quartz-pyrite veinlets exhibit local chalcocite and bornite tarnish; pyrite disseminated along fractures.
760	10	100%	18502	.06					
770	10	100%	18503	.04					
780	10	100%	18504	.03					Chalcocite coating pyrite along open veinlet at 783'.
790	10	100%	18505	.05					
800	10	100%	18506	.06					
810	10	100%	18507	.05					
820	10	100%	18508	.05					

District Harshaw-Red Mountain **Hole Number** DDH-142 **Page Number** 9

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
825								Tuff Breccia	Large fragments generally fine-grained, cut by frequent steeply dipping pyrite veins.	SERICITE-CLAY-ALUNITE with alunite and quartz. Complete replacement of original rock by sericite and clay.	3-5% disseminated pyrite exhibiting some bornite coatings; massive pyrite veins exhibit bornite coatings locally along open veins and fractures.
830	10	100%	18509	.05							
840	10	100%	18510	.06							
847											Pyrite in sub-crystaline masses along 1/8" veinlets of clay, quartz, and pyrite exhibiting chalcocite tarnish and occasional coatings.
850	10	100%	18511	.03							
857											Virtually no disseminated pyrite, only vein fillings of pyrite.
860	10	100%	18512	.05					Sparse veinlets and fracturing.		
863											
870	10	100%	18513	.05					Cut by numerous sulfide veinlets.		1/8" black sphalerite veinlet at 45° to core at 873' contains minor pyrite and copper staining.
875								Monzonite Porphyry	Massive, pink to grey, cut by numerous hairline veinlets of pyrite-alunite.	Groundmass altered to sericite with phenocrysts of clay after alunite.	
880	10	100%	18514	.05							
890	10	100%	18515	.08							
894								Tuff and Tuff Breccia	Medium-grained, speckled grey and white.	Alunite stringers border pyrite veinlets.	1/8 - 1/4" massive pyrite veinlets and quartz-pyrite veinlets are numerous.
900	10	100%	18516	.06							

District Harshaw-Red Mountain   Hole Number DDH-142   Page Number 10

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
910	10	100%	18517	.03				Tuff and Tuff Breccia	Pinkish grey, medium to fine-grained cut by open quartz-sulfide veinlets with sulfides coating fractures.	SERICITE-CLAY-ALUNITE with quartz and pyrite.	Pyrite weakly disseminated, in quartz veinlets, smeared along fractures, and in occasional 1/8" massive pyrite veinlets; chalcocite coating disseminated pyrite and occasionally in open fractures and quartz-pyrite veins.
920	10	100%	18518	.04							
930	10	100%	18519	.06							
935								Breccia	Tuff and monzonite fragments in siliceous matrix cut by numerous veinlets.	QUARTZ-SERICITE-ALUNITE with clay and pyrite, silica flooding very pronounced.	Minor sooty chalcocite coating pyrite in fracture zones bordering tight quartz-pyrite veins. Total sulfide content is 7-10%.
940	10	100%	18520	.09							
950	10	100%	18521	.05							Prominent alunite-pyrite-sphalerite vein at 952'.
955									Grey, fine-grained, reduced fracturing and veinlets.	Sericite-alunite-clay, very minor pyrite and quartz.	Minor chalcocite coatings on pyrite, no disseminated pyrite.
960	10	100%	18522	.05							
962										More intense silica flooding.	Slightly increased pyrite content in veinlets; occasional massive pyrite veins.
970	10	100%	18523	.04							
975										Alunite-clay-sericite with quartz veinlets filling hairline fractures.	Hairline pyrite veinlets with chalcocite tarnish.
980	10	100%	18524	.02							
982										Silica flooding and massive sulfide veinlets.	Chalcocite and bornite coating scattered pyrite veinlets.
990	10	100%	18525	.06							
993										No silica flooding and fewer veinlets.	¼" quartz-pyrite vein, vertical with no chalcocite; is cross-cut by chalcocite coated pyrite veinlets.
1000	10	100%	18526	.03							
1010	10	100%	18527	.07							

District Harshaw-Red Mountain   Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
1013								Trachyte Tuff	Medium to dark grey, cut by quartz-sulfide veinlets.	Quartz-sericite-alunite with pyrite; silica flooding adjacent to veinlets.	Minor oxidation below 1015; chalcocite associated with massive quartz-pyrite veinlets.
1017								Transition Zone	Dark grey, speckled, appears to be transition between trachyte and andesite porphyry.		10% pyrite and more abundant chalcocite coatings.
1020	10	100%	18528	.08				Andesite(?) Porphyry	Dark grey, massive, plagioclase phenocrysts up to ¼" long; felty sericite matrix is greenish sericite.	SERICITE-CHLORITE-clay. Alunite replacing phenocrysts and being replaced by clay. Very rare quartz and pyrite, magnetite.	Pyrite disseminated along fractures, weakly coated with chalcocite. Strong oxidation along fractures.
1030	10	100%	18529	.05							
1040	10	100%	18530	.03							
1042									Fractured and bleached zone.	Quartz-sericite-pyrite.	Thick coatings of sooty chalcocite inside and outside faces of numerous ½" pyrite veinlets.
1045									Greenish-grey, massive tan fracture coatings.	SERICITE-CHLORITE-CLAY with minor quartz and pyrite.	10-20% oxidation localized along fractures; goethite replacing pyrite in open quartz-pyrite veins. No chalcocite.
1050	10	100%	18531	.03							
1060	10	100%	18532	.02							
1070	10	100%	18533	.07						Quartz-sericite envelopes surrounding veins.	More numerous veinlets.
1080	10	100%	18534	.04				~~Breccia~~ Stockwork	1" to 2" fragments cut by numerous veins.		
1090	10	100%	18535	.06							
1095									Medium greenish-grey, mottled looking.	SERICITE-CHLORITE-CLAY with pyrite and quartz.	Massive pyrite veinlets.
1100	10	100%	18536	.03							

District Harshaw-Red Mountain Hole Number DDH-142 Page Number 12

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo		Rock Type	Rock Description	Alteration	Mineralization
1103							Andesite(?)	Light greenish-grey,	QUARTZ-SERICITE-PYRITE	Pyrite in prominent veinlets, very
							Porphyry	cut by numerous vein-	and locally clay; extreme	rarely disseminated.
1110	10	100%	18537	.08				lets.	bleaching.	
1115							Breccia(?)	Core is badly broken.	Chlorite coating fractures	Sharp decrease in number of pyrite
							Badly broken	*zone - intense kaolin*	associated with minor	veinlets.
1120	10	100%	18538	.08					oxidation.	
1130	10	100%	18539	.10						
1140	10	100%	18540	.10						
1150	10	100%	18541	.07					Sericite-chlorite-clay with	Pyrite veinlets with only minor dissem-
									moderate pyrite; no magne-	inated sulfides.
1160	10	100%	18542	.08					tite.	
1163								Mottled, greenish-grey	Chlorite-clay alteration of	
								fragments surrounded by	fragments with quartz-seri-	
								light grey envelopes.	cite borders.	
								Moderate fracturing.		
1170	10	100%	18543	.05				Core is badly shattered.		
1178							Andesite	Plagioclase laths are	Sericite-chlorite-clay with	
								fewer and smaller.	associated magnetite and	
1180	10	100%	18544	.06					less pyrite.	
1186							Andesite	Rock is 60% feldspar	Quartz-sericite-chlorite	
							Porphyry	laths in a felty green	with magnetite, pyrite con-	
1190	10	100%	18545	.06				matrix.	fined to veinlets.	
1199							Quartz (?)	Medium grey with gener-	QUARTZ-SERICITE-CHLORITE	10%-15% pyrite, disseminated and in
							Monzonite	ally small plagioclase	with pyrite, no magnetite.	veinlets.
1200	10	100%	18546	.10			Porphyry	phenocrysts in quartz		
								matrix.		
1210	10	100%	18547	.07						

District Harshaw-Red Mountain **Hole Number** DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
1211								Breccia of Quartz, Monzonite, and Andesite Porphyry	Large fragments several inches across the two different rocks.	Quartz-sericite-chlorite with clay and pyrite.	Pyrite disseminated in monzonite but not in andesite; pyrite veins cut both rock types.
1220	10	100%	18548	.10							
1222									Tan on dark greenish-grey; mostly andesite porphyry.	Sericite-chlorite-clay with magnetite in the andesite.	Oxidation along fractures and locally of entire rock.
1230	10	100%	18549	.12							
1236									Greenish-grey, mostly quartz monzonite.	QUARTZ-SERICITE-CLAY with pyrite and magnetite; hematite coating most fractures.	Sharply reduced oxidation, localized along some fractures only. Pyrite in veinlets and disseminated along fractures. ¼" pyrite-sphalerite vein at 1237'.
1240	10	100%	18550	.10							
1250	10	100%	18551	.10					Medium-grey with dark quartz bands 1" wide adjacent to some sulfide veinlets.	More intense quartz-sericite-pyrite alteration.	More numerous, near-vertical, pyrite and quartz-pyrite veinlets.
1260	10	100%	18552	.15							
1268								Quartz Monzonite Breccia	Lighter, pinkish greys.	QUARTZ-SERICITE-PYRITE replaces entire rock, minor alunite in quartz-pyrite veins.	10-15% pyrite, disseminated and in veinlets; minor chalcopyrite in alunitite quartz-pyrite veinlets.
1270	10	100%	18553	.09							
1278								Fault Gouge	Pulverized monzonite.		
1280	10	100%	18554	.35				Breccia	Mottled, cut by quartz veins.	Quartz-sericite-pyrite with clay.	Minor oxidation.
1285								Mixed Monzonite and Andesite	Dark greenish-grey, soft, cut by quartz veinlets.	Sericite-chlorite-clay with quartz and pyrite. No magnetite. Locally intense quartz alteration.	Pyrite in veinlets and disseminated along fractures.
1290	10	100%	18555	.36							
1300	10	100%	18556	.06							
1310	10	100%	18557	.03							

District Harshaw-Red Mountain Hole Number DDH-142 Page Number 14

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
1312						Brecciated	Dark greenish-grey,	Quartz-sericite-chlorite	1/8" pyrite and quartz-pyrite veinlets,
						Monzonite	abundant plagioclase and	with pyrite and clay; minor	with pyrite disseminated along fractures
1320	10	100%	18558	.07		Porphyry	some orthoclase pheno-	local manganese along open	and strongly disseminated in zones of
							crysts.	fractures, probably super-	more intense quartz alteration.
1322								gene.	Partial oxidation, generally along
									fractures.
1330	10	100%	18559	.06					
1335						Andesite	Fine-grained, massive.	Alteration has completely	
								destroyed original rock	
1340	10	100%	18560	.05				texture.	Prominent vein zone at 1342'.
1342						Andesite	Large fragments in a	Quartz-sericite-chlorite	Pyrite limited to prominent vein zones,
						Porphyry	siliceous matrix, cut by	with magnetite.	manganese along open pyrite veins.
1350	10	100%	18561	.07		and/or	numerous veinlets.		
						Diabase			
1360	10	100%	18562	.06		Breccia			
1374	14	100%	18563	.05		Diabase	Fewer veinlets, lined	Less quartz alteration.	Sulfides in massive quartz pyrite veinlets
	REDUCE	TO NX	CORE				with hematite.		only.
1380	6	100%	18564	.05					
1384							Medium to dark grey and	Background alteration of	Pyrite and quartz-pyrite veinlets with
							tan cut by numerous	sericite-chlorite clay with	hematitic limonite replacing pyrite.
1390	10	100%	18565	.05			veinlets bounded by	magnetite has quartz-seri-	
							alteration halos.	cite-pyrite alteration	
								superimposed adjacent to	
								pyrite and quartz-pyrite	
								veinlets.	
1395									¼" quartz-pyrite-sphalerite vein.
1400	10	100%	18566	.18					

District Harshaw-Red Mountain Hole Number DDH-142 Page Number 15

Depth	Int.	%Core Rcvy	Samp. No.	Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
1402								Andesite Porphyry ~~Breccia~~	Breccia texture masked by alteration and veins.	Quartz-sericite-pyrite with local chlorite and clay.	Pyrite in veinlets and disseminated in quartz-sericite altered zones exhibiting chalcopyrite tarnish.
1410	10	100%	18567	.20							
1420	10	100%	18568	.13					Medium grey rock cut by fewer but more massive veins.	Quartz-sericite-pyrite superimposed on sericite-chlorite-clay.	Prominent quartz-pyrite veins and some sphalerite-pyrite veins, as at 1429'.
1430	10	100%	18569	.18							
1440	10	100%	18570	.16							
1450	10	100%	18571	.24							
1452								Andesite	Dark grey rock, tan on oxidized fractures; cut by fewer veinlets.	Quartz-sericite-pyrite with chlorite.	Oxidation along fractures and iron flooding of rock; pyrite veinlets are less numerous.
1459								Breccia	Medium grey rock cut by numerous veinlets.	QUARTZ-SERICITE-PYRITE; very intense alteration	Pyrite and quartz-pyrite veinlets exhibit chalcopyrite tarnish.
1460	10	100%	18572	.11				Diabase Breccia			
1470	10	100%	18573	.16							
1480	10	100%	18574	.13					Tan coloration along fractures.	Intense quartz alteration.	Pyrite in veinlets exhibits no chalcopyrite tarnish.
1490	10	100%	18575	.08							
1500	10	100%	18576	.08							
1502											Hematite-pyrite-galena veinlets.
1510	10	100%	18577	.10							
1517								Diabase	Medium-grey, dense, massive, cut by quartz and quartz-pyrite veinlets.	Quartz-chlorite-magnetite with some pyrite and clay.	Pyrite in veinlets and weakly disseminated throughout rock. Chalcopyrite tarnish along some prominent pyrite veins.
1520	10	100%	18578	.03							

District Harshaw-Red Mountain   Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
1525								Diabase	Dark grey to black, dense, massive, cut by pyrite and quartz-pyrite veins.	Quartz-chlorite-clay. Magnetite with some pyrite and sericite.	Pyrite in veinlets, very sparsely disseminated; very minor chalcopyrite tarnish.
1530	10	100%	18579	.06							
1540	10	100%	18580	.02							
1543										Black, secondary biotite in quartz-alunite veinlet. ?	
1550	10	100%	18581	.06							
1559								Andesite Porphyry	Black, massive fine-grained, cut by occasional quartz veins.	Quartz-chlorite-magnetite.	
1560	10	100%	18582	.06							
1565										Secondary feldspar adjacent to pyrite veinlet, followed by more numerous quartz veinlets.	
1570	10	100%	18583	.08							
1574								Fault Shear		Chlorite-clay.	
1578								Diabase	Black, dense, massive, fine-grained.	Quartz-chlorite-magnetite with some secondary plagioclase and rare orthoclase.	Minor sulfides restricted to thin veinlets.
1580	10	100%	18584	.08							
1590	10	100%	18585	.04					½' zone of coarse-grained porphyry.	Phenocrysts altered to clay.	
1593										Secondary black biotite along thin quartz stringers, thick quartz envelopes surround thin pyrite veins; visible grains of magnetite disseminated throughout rock.	

District Harshaw-Red Mountain   Hole Number DDH-142   Page Number 17

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
1600	10	100%	18586	.02				Diabase	Black, dense, massive,	Quartz-chlorite-magnetite,	Low sulfide content; pyrite with amber
									hard, plagioclase and	with secondary plagioclase	to black sphalerite in quartz-alunite
1610	10	100%	18587	.02					chlorite phenocrysts	laths and some orthoclase	veinlets; occasional chalcopyrite tarnish.
									in fine-grained matrix.	along quartz veins.	
1619								Fault	Reddish brown limonite,	Chlorite-clay-sericite with	
								Gouge	and grey soft gouge.	minor pyrite and quartz.	
1620	10	100%	18588	.02							
1629								Diabase		Plagioclase laths replaced	Pyrite and quartz-pyrite stringers con-
										by alunite and clay, chlor-	tain no other sulfide minerals.
1630	10	100%	18589	.02						ite plates resembling	
										biotite.	
1640	10	100%	18590	.04					More numerous quartz-		
									pyrite veins.		
1650	10	100%	18591	.13							
1657								Fault		Chlorite-clay	
								Gouge			
1660	10	100%	18592	.04							
1662								Diabase	Black, massive, cut by		
									reddish-brown coated		
1670	10	100%	18593	.06					fractures.		
1680	10	100%	18594	.05							
1690	10	100%	18595	.03							
1700	10	100%	18596	.07				Fault		Chlorite-pyrite	
								Gouge			
1705								Andesite	Medium to light-grey;	Quartz-sericite-pyrite;	Pyrite veinlets with minor sphalerite,
									cut by numerous vein-	intense alteration.	some chalcopyrite disseminated and in
1710	10	100%	18597	.17					lets.		pyrite veinlets; massive pyrite veinlet
											at 1726' with exotic hematite.
1720	10	100%	18598	.22							

District Harshaw-Red Mountain **Hole Number** DDH-142 **Page Number** 18

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
1730	10	100%	18599	.15		Andesite and/or Diabase	Reddish brown to dark grey, cut by numerous veinlets.	Quartz-chlorite-clay with magnetite.	Pyrite-sphalerite veinlets carry minor chalcopyrite, coated with bornite.
1740	10	100%	18600	.10					
1745						Breccia	Tan to light grey.	Quartz-sericite-pyrite with occasional secondary orthoclase.	Pyrite-chalcopyrite-sphalerite vein with massive and sooty chalcocite at 1747', other smaller veinlets with similar minerology.
1750	10	100%	18601	.18					
1760	10	100%	18602	.11					
1761							Light to medium grey.	Extreme quartz alteration with associated sericite and pyrite.	Massive pyrite veinlets but no associated zinc or copper minerals.
1770	10	100%	18603	.18					
1773						Fluidized Breccia	1"-2" fragments of andesite, diabase, monzonite and hornfels in a medium-grained "Arkosic" groundmass of quartz and feldspar.	Fragments exhibit varying alteration assemblages with pyrite reaction rims surrounding some fragments.	No uninterrupted sulfide veinlets; disseminated pyrite in some fragments and disseminated in matrix.
1776						Andesite Porphyry Breccia	Orangish-red to medium-grey, fragments separated and rotated in siliceous matrix.	Quartz-chlorite-sericite with pyrite and clay-sericite.	Pyrite and quartz-pyrite veinlets with local chalcopyrite and sphalerite.
1780	10	100%	18604	.33					
1782							Dark to medium grey, cut by numerous vein zones.	Pyrite and quartz-pyrite veinlets bordered by quartz-sericite-pyrite borders and local orthoclase flooding.	Pyrite-sphalerite veinlets with local chalcopyrite tarnish.
1790	10	100%	18605	.09					
1795						Breccia	Original rock completely obscurred.	Sericite-clay-chlorite with minor pyrite and quartz.	Oxidized and iron stained.

District Harshaw-Red Mountain | Hole Number DDH-142 |

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
1797						Amygdaloidal Andesite	¼" elongate vesicles filled with clay and sericite.	Quartz-sericite-clay with magnetite and chlorite.	Hairline pyrite and quartz-pyrite veinlets; very minor disseminated pyrite, partial oxidation.
1800	10	100%	18606	.06					
1810	10	100%	18607	.05					
1815							Medium-grey.	Quartz-sericite-pyrite.	
1820	10	100%	18608	.07					
1822						Breccia	Black to greenish-grey.	Chlorite-sericite-clay with quartz and pyrite.	1/8" pyrite veins and occasional quartz-pyrite zones; partial oxidation.
1830	10	100%	18609	.12					
1840	10	100%	18610	.08					
1842						Amygdaloidal Andesite	Fine-grained, black groundmass cut by numerous hairline veinlets.	Chlorite-magnetite with quartz-pyrite veinlets.	Partial oxidation.
1850	10	100%	18611	.05					
1855								Quartz-sericite-pyrite alteration completely replacing original rock.	Disseminated pyrite.
1860	10	100%	18612	.07					
1865						Andesite or Diabase	Black, reddish-brown along oxidized fractures.	Biotite-chlorite-sericite with magnetite; local zones of intense quartz-pyrite.	Quartz-pyrite veinlets, with chalcocite and molybdenite at 1870'.
1870	10	100%	18613	.04					
1880	10	100%	18614	.08					
1890	10	100%	18615	.06					
1894						Amygdaloidal Andesite	Black, massive.	Clay and sulfides fill amygdules; chlorite-sericite-clay alteration of groundmass accompanied by magnetite.	Quartz-pyrite veinlets and pyrite-chalcopyrite-molybdenite sulfides in amygdules.
1900	10	100%	18616	.09					
1910	10	100%	18617	.08					

District Harshaw-Red Mountain Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
1912						Andesite and/or Diabase	Black, felty, fine-grained groundmass with occasional feldspar laths.	Chlorite-biotite-magnetite with quartz-pyrite veins.	Minor chalcocite coating pyrite veins; no disseminated pyrite noted.
1920	10	100%	18618	.07				Thicker quartz and quartz-pyrite veins.	Quartz-chalcopyrite-molybdenite veins with minor chalcocite coatings; good molybdenite at 1926'.
1930	10	100%	18619	.12			Numerous hairline quartz veinlets.	Chlorite-biotite-magnetite with local clay, quartz and pyrite veinlets carrying calcite.	Reduced pyrite content with local chalcopyrite tarnish; no molybdenite noted.
1940	10	100%	18620	.09					
1950	10	100%	18621	.08					
1953									Prominent pyrite-sphalerite vein.
1955						Fault Gouge		Chlorite-clay-calcite.	
1958						Diabase	Black, dense, hard fine-grained, cut by pyrite, quartz, and quartz-pyrite veinlets with calcite.	Biotite-chlorite-clay with magnetite; local quartz-clay-pyrite zones. Occasional grains of black quartz.	Pyrite and minor chalcopyrite in quartz veins, no disseminated sulfides.
1960	10	100%	18622	.08					
1970	10	100%	18623	.06					
1980	10	100%	18624	.02					
1990	10	100%	18625	.04					
2000	10	100%	18626	.02				Quartz-pyrite vein zone.	Pyrite disseminated and in veins with local chalcocite tarnish. Sphalerite in $\frac{1}{4}$" pyrite vein at 2012'.
2010	10	100%	18627	.08					
2020	10	100%	18628	.10					
2030	10	100%	18629	.05					

District Harshaw-Red Mountain Hole Number DDH-142 Page Number 21

Depth	Int.	%Core Rcvy	Samp. No.	Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
2040	10	100%	18630	.06		Andesite and/or Diabase	Black, dense, massive hard, fine-grained; cut by numerous sulfide and quartz veinlets.	BIOTITE-CHLORITE-CLAY with magnetite; calcite on veinlets.	Pyrite and rarely sphalerite in quartz veins, no disseminated sulfides.
2050	10	100%	18631	.03					
2060	10	100%	18632	.03					
2062						?	Large fragments in siliceous matrix exhibit a mottled appearance.	QUARTZ-BIOTITE-MAGNETITE with chlorite and clay; calcite occurs in quartz-pyrite veinlets.	Pyrite veinlets exhibit very weak chalcopyrite tarnish.
2070	10	100%	18633	.02					
2080	10	100%	18634	.06					Magnetite veins at 2087 feet and below.
2090	10	100%	18635	.06					
2100	10	100%	18636	.06					Prominent ½" quartz veins carry pyrite, chalcopyrite and molybdenite.
2110	10	100%	18637	.04					
2120	10	100%	18638	.04		Breccia	Andesite and hornfels.		Pyrite-chalcopyrite-sphalerite veins exhibit some chalcocite replacement.
2123						Hornfels Andesite Breccia	Black, fine-grained hornfels and andesite.	Biotite-chlorite-magnetite.	
2125						Hornfels Breccia	Medium to dark grey.	Clay-sericitization, local biotite and magnetite.	Minor oxidation and chalcocite, bornite, and chalcopyrite tarnishes on some pyrite veinlets.
2130	10	100%	18639	.07					
2140	10	100%	18640	.09					
2149						Hornfels	Dark grey, cut by very numerous hairline veinlets.	Biotite-chlorite-magnetite. Pyrite veinlets surrounded by dispersion envelopes of light grey material with very low iron content.	Minor oxidation along veinlets; no noticeable secondary or primary copper mineralization.
2150	10	100%	18641	.13					
2160	10	100%	18642	.07					
2170	10	100%	18643	.11					Prominent sulfide veinlet at 2181' carries minor chalcocite tarnish.
2180	10	100%	18644	.08					

District Harshaw-Red Mountain Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
2183						Hornfels	Mottled dark grey to reddish-brown, cut by veinlets. Bedding planes visible at 2189 at 75° to core axis.	Biotite-chlorite-magnetite; clay at 2187'.	Partial oxidation; pyrite veinlets with no visible copper mineralization.
2188						Andesite(?) Hornfels Breccia	Medium-grey, massive. Original rock completely destroyed.	Quartz-Sericite-Pyrite with minor magnetite and chlorite.	5 to 7% sulfides, mostly pyrite with minor disseminated chalcopyrite; chalcopyrite with bornite coatings in veinlets at 2195'.
2190	10	100%	18645	.08					
2200	10	100%	18646	.09					
2210	10	100%	18647	.08					2211 Octahedral galena in prominent open vein of cubic pyrite.
2215						Andesite Breccia	Dark to medium grey.	Quartz-chlorite-magnetite cut by quartz-pyrite veins surrounded by quartz-sericite-clay envelopes.	
2220	10	100%	18648	.07					
2230	10	100%	18649	.08					
2232								Quartz-sericite-pyrite envelopes up to 1" thick.	Pyrite-sphalerite veins; alunite-chalcopyrite-galena-pyrite veins, and quartz-pyrite are numerous; minor sooty chalcocite.
2240	10	100%	18650	.10					
2250	10	100%	18651	.07				chlorite on shear plane w/ slickensides	
2255						Andesite	Grey, with local dark grey zones.	2" chlorite vein marks top of quartz-sericite-pyrite zone with minor chlorite and magnetite; clay and alunite ? are common.	Hairline to ¼" sulfide veinlets carry mostly pyrite with minor chalcopyrite and sphalerite; partial oxidation along fractures.
2260	10	100%	18652	.10					
2270	10	100%	18653	.15					
2280	10	100%	18654	.09					

District Harshaw-Red Mountain Hole Number DDH-142 Page Number 23

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
2290	10	100%	18655	.12		Andesite	Reddish-brown to light	Quartz-Sericite-Pyrite en-	Increased oxidation with iron flooding
						Fault zone	grey cut by numerous	velopes along veins super-	much of the rock. ¼" quartz-pyrite veins
2300	10	100%	18656	.09			veins.	imposed on magnetite-chlor-	are open and vuggy, with local chalco-
								ite biotite alteration.	pyrite.
2310	10	100%	18657	.10					
2320	10	100%	18658	.12					
2330	10	100%	18659	.10					
2333							Light grey with reddish	Quartz-Sericite-Pyrite	Quartz-pyrite veins ¼" wide carry 1/16"
							brown oxidation along	alteration completely re-	molybdenum sericite zone along outside.
							½ foot zone at 2336'.	placing prior minerals.	
2338						Fault	Gouge		
2339						Breccia	1" to 2" fragments of	Fragments exhibit quartz-	
							differing composition	sericite-pyrite.	
2340	10	100%	18660	.08			with open spaces part-		
							ially filled with an-		
							kerite.		
2341						Diabase	Light to medium grey,	Quartz-sericite-pyrite with	Prominent vertical veinlets of quartz-
							cut by numerous vein-	sparse magnetite.	pyrite with sphalerite and galena;
2350	10	100%	18961	.17			lets.		locally molybdenite and chalcopyrite.
2356								Zones of magnetite are	Partial oxidation and iron flooding.
								larger and more abundant.	
2360	10	100%	18962	.07					
2365							Dark greenish grey.	Magnetite-biotite-clay with	Pyrite veinlets with minor chalcopyrite,
								quartz-pyrite-sericite vein-	molybdenite smeared along a few fractures;
								lets.	partial oxidation.
2370	10	100%	18963	.08					Oxidation limited to pyritic veinlets
									along fractures.

District Harshaw-Red Mountain Hole Number DDH-142 Page Number 24

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
2380	10	100%	18664	.08				Diabase	Dark grey to black,	Magnetite and chlorite with	Pyrite with minor chalcopyrite in and
									dense, massive, cut by	secondary plagioclase, prom-	adjacent to veins; no disseminated sul-
2390	10	100%	18665	.10					fewer veinlets.	inent quartz-sericite-py-	fides; local oxidation along fractures.
										rite veins.	
2400	10	100%	18666	.09							
2410	10	100%	18667	.04							
2420	10	100%	18668	.03							
2426									Light grey.	Prominent zone of quart-	
										sericite-pyrite.	
2430	10	100%	18669	.06							
2432								Gouge	Greenish grey.	Clay-Chlorite.	
2434								Diabase	Black to dark grey,	Chlorite-magnetite with	Pyrite in veins and disseminated in alter-
									dense, cut by numerous	secondary plagioclase	ation envelopes adjacent to veins; no pyrite
2440	10	100%	18670	.11					hairline fractures and	quartz-sericite-pyrite and	disseminated in dense black material.
									more prominent vein	occasional calcite veinlets.	Locally small blebs of chalcopyrite in open
2450	10	100%	18671	.13					zones.		quartz-pyrite veins.
2460	10	100%	18672	.05							
2470	10	100%	18673	.10							
2480	10	100%	18674	.08							Molybdenite veinlet at 2484'. ?
2490	10	100%	18675	.13						Prominent quartz-sericite-	
										pyrite zone from 2498 to	
2500	10	100%	18676	.11						2502'; 2" quartz-pyrite vein	6" quartz-pyrite vein cruss cut by pyrite-
										at 2506'.	molybdenite vein at 2507.
2510	10	100%	18677	.06							
2520	10	100%	18678	.04					Vertical shear cut by		
									numerous calcite and		
2530	10	100%	18679	.06					quartz veinlets exhibits		
									strong oxidation at 2522'.		

District Harshaw-Red Mountain　　Hole Number DDH-142　　Page Number 25

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Assays Mo	Rock Type	Rock Description	Alteration	Mineralization
2535						Diabase	Dark grey, cut by numerous veinlets.	Biotite, magnetite with thin quartz-sericite-pyrite alteration halos along pyrite veinlets.	Oxidation along selected fractures, local chalcopyrite in pyrite veinlets.
2540	10	100%	18680	.04					
2544							Core is badly broken, yellowish-brown.		Oxidation very strong along fractures.
2547							Light grey to pink.	Massive quartz-sericite-pyrite zone.	
2548						Diabase	Dark grey, massive, cut by numerous thin veinlets filling fractures and local massive quartz-sulfide veinlets.	Chlorite-magnetite with alunite-sericite; quartz and pyrite zones are locally massive, as at 2557, 2564, and 2570'.	Jarosite-pyrite veinlets exhibit minor chalcopyrite.
2550	10	100%	18681	.06					
2560	10	100%	18682	.14					
2570	10	100%	18683	.09					
2580	10	100%	18684	.07					
2586						Vein Zone	Quartz vein with numerous inclusions of andesite.	Quartz-sericite-pyrite with andesite fragments cut by secondary orthoclase veinlets.	Massive pyrite and minor chalcopyrite with massive molybdenite veinlet at 2588'.
2589						Diabase	Fine-grained groundmass with plagioclase phenocrysts; rock is cut by numerous hairline veinlets.	Biotite-magnetite and secondary plagioclase cut by calcite and quartz-pyrite veinlets.	No disseminated sulfides; pyrite with chalcopyrite tarnish associated with quartz veins; locally fine-grained molybdenite.
2590	10	100%	18685	.15					
2600	10	100%	18686	.07					
2610	10	100%	18687	.04					
2612							Zone of intense veining.	Quartz-sericite-pyrite veinlets and minor secondary orthoclase in veins; magnetite-chlorite and secondary plagioclase.	Pyrite in veinlets only.
2620	10	100%	18688	.07					

District Harshaw-Red Mountain   Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
2622						Diabase	Dark grey rock cut by	Biotite-magnetite-secondary	Fine-grained chalcopyrite with pyrite in
							numerous quartz-pyrite	plagioclase cut by quartz-	veinlets. Larger vuggy veinlets contain
2630	10	100%	18689	.07			filled fractures.	pyrite-sericite vein zones.	sooty chalcocite replacing chalcopyrite.
2640	10	100%	18690	.13			Zones of prominent quartz-		
							pyrite veins at 2643',		
2650	10	100%	18691	.08			2648', 2656', 2661',		
							2678', 2689', and 2698'.		
2660	10	100%	18692	.07					
2670	10	100%	18693	.08					Locally prominent chalcopyrite-molybdenite
									veinlets, 1 or 2 per 10 foot interval.
2680	10	100%	18694	.14					
2690	10	100%	18695	.13					
2700	10	100%	18696	.11					
2710	10	100%	18697	.10					
2712						Hornfels	Medium-grey, cherty.	Quartz-sericite-pyrite with	Disseminated pyrite and more massive pyrite
								clay and minor chlorite.	and sooty chalcocite in frequent vuggy
									open vein zones. Minor local chalcopyrite.
2714						Diabase	Dark grey, cut by num-	Biotite-magnetite-plagio-	Chalcopyrite and pyrite disseminated along
							erous close-spaced	clase with quartz-sericite-	fractures and in quartz veins.
2720	10	100%	18698	.23			quartz filled fractures	pyrite zones along frac-	
							and frequent quartz-	tures.	
2730	10	100%	18699	.11			sulfide-sericite vein-		
							lets.		
2740	10	100%	18700	.07					Fewer veins below 2730'.
2750	10	100%	18701	.12					
2760	10	100%	18702	.11					6" siliceous vein zone at 2668' but chal-
									copyrite is less abundant.
2770	10	100%	18703	.08					

District Harshaw-Red Mountain　　Hole Number DDH-142　　

Depth	Int.	%Core Rcvy	Samp. No.	Assays				Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo						
2780	10	100%	18704	.08				Diabase	Dark grey, cut by numerous close-spaced hairline veinlets.	Biotite-magnetite with occasional ½ to 1" quartz-sericite-pyrite vein zones.	Pyrite on vein and veinlets only, with some chalcopyrite.
2790	10	100%	18705	.10							
2800	10	100%	18706	.11							
2802									More numerous siliceous zones.		Pyrite and chalcopyrite in quartz-sericite veins and some chalcocite in open vein zones as at 2824', 2832', and 2838'.
2810	10	100%	18707	.23							
2816									Fewer siliceous zones.		Occasional veins exhibit chalcocite replacing zinc.
2820	10	100%	18708	.19							
2830	10	100%	18709	.08							
2840	10	100%	18710	.14							
2850	10	100%	18711	.16							
2854									Medium grey, siliceous zone with scattered diabase fragments.	Quartz-sericite-pyrite.	Pyrite and some chalcopyrite with local chalcocite and bornite in vuggy vein zones.
2859									Dark grey, cut by frequent thin quartz-sulfide vein zones.	Biotite-magnetite-secondary plagioclase.	Pyrite and minor chalcopyrite with chalcocite probably replacing zinc.
2860	10	100%	18712	.17							
2866									Siliceous zone.	Quartz-sericite-pyrite.	Pyrite, chalcopyrite and minor molybdenite.
2869									Dark grey, hairline veinlets 3 to 4" apart.	Biotite-magnetite, secondary plagioclase.	Pyrite and chalcopyrite veinlets.
2870	10	100%	18713	.12							
2878									Siliceous zone.	Quartz-sericite-pyrite.	Pyrite and chalcopyrite with minor chalcocite replacing sphalerite.
2880	10	100%	18714	.14							

District Harshaw-Red Mountain   Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo		Rock Type	Rock Description	Alteration	Mineralization
2883							Diabase	Dark grey cut by frequent hairline fractures.	Magnetite-biotite and secondary plagioclase.	Minor pyrite along hairline veinlets.
2889								Light grey, cut by numerous veins.	Quartz-sericite-pyrite.	Pyrite-chalcopyrite along fractures and chalcocite filling some vuggy veins.
2890	10	100%	18715	.09						
2896								Dark grey, cut by numerous veinlets less than 1" apart.	Magnetite-biotite-secondary plagioclase with local quartz-sericite-pyrite.	Minor pyrite and chalcopyrite in hairline quartz veinlets.
2900	10	100%	18716	.16						
2910	10	100%	18717	.08						
2915							Hornfels	Dark to medium grey, fine-grained, cut by numerous hairline veinlets and occasional ¼" quartz veins.	Quartz-sericite-pyrite with magnetite.	Pyrite and chalcopyrite with chalcocite filling vugs.
2920	10	100%	18718	.14						
2930	10	100%	18719	.13						
2933								Prominent banding at 10 to 15° to core.	Envelopes of stronger alteration adjacent to more prominent quartz veins which carry magnetite.	Pyrite, chalcopyrite and magnetite in veins and adjacent alteration envelopes. Prominent 1/8" molybdenite vein at 2938'.
2940	10	100%	18720	.08						
2950	10	100%	18721	.15						
2960	10	100%	18722	.13						
2970	10	100%	18723	.13						
2980	10	100%	18724	.11						
2982									Chlorite associated with more intense silica flooding and pyritization.	
2985							Breccia	Hornfels fragments in diabase matrix.		

District Harshaw-Red Mountain   Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
2988						Diabase	Dense, dark grey, fine to medium-grained, cut by frequent hairline clay-pyrite-calcite veinlets.	Magnetite-biotite-secondary plagioclase.	Pyrite and chalcopyrite disseminated along fractures. ¼" pyrite-chalcopyrite vein at 2996'.
2990	10	100%	18725	.13					
3000	10	100%	18726	.17					
3001						Vein		Quartz-sericite-pyrite with late stage scalenohedrons of calcite.	Vertical quartz-pyrite vein carried pyrite and chalcopyrite with some chalcocite replacing former sphalerite.
3010	10	100%	18727	.62					
3018						Diabase	Thin veins and veinlets with thicker vein zones 5 to 10 feet apart.	Magnetite-biotite, and secondary plagioclase with quartz-sericite pyrite in vein zones with clorite and calcite.	Pyrite and chalcopyrite in veins only, associated with chalcocite locally replacing sphalerite and late stage disseminated molybdenite in drusy quartz veins.
3020	10	100%	18728	.31					
3030	10	100%	18729	.25					
3040	10	100%	18730	.07					
3050	10	100%	18731	.09					
3060	10	100%	18732	.11				Chlorite at 3068'.	Quartz-pyrite-calcite vein with minor chalcopyrite at 3072' and chalcopyrite and molybdenite at 3075'.
3070	10	100%	18733	.04					
3083	13	100%	18734	.06				Chlorite-magnetite with clay and biotite in fractures.	Thin coatings of chalcopyrite along fractures. Very sparse 1% fine-grained pyrite disseminated throughout rock.
---------- BEGIN BX CORE ----------									
3090	7	100%	18735	.02			¼" vertical quartz-pyrite vein zone extends to 3110'.		
3100	10	100%	18736	.06					
3110	10	100%	13737	.08					

District Harshaw-Red Mountain   Hole Number DDH-142   Page Number 30

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo		Rock Type	Rock Description	Alteration	Mineralization
3114							Diabase	Dense, dark grey to black, cut by sulfide and quartz-calcite veinlets.	Biotite-magnetite-chlorite with local quartz-chlorite-pyrite veinlets surrounded by dispersion envelopes.	Pyrite and chalcopyrite veinlet.
3120	10	100%	18738	.04						
3125										Increased chalcopyrite content along veinlet and fracture fillings accompanied by sphalerite and galena.
3130	10	100%	18739	.23						
3140	10	100%	18740	.06						
3150	10	100%	18741	.08					One foot interval of quartz-sericite-pyrite at 3149' bordering ½" sulfide veinlet.	Pyrite and minor tennentite followed by local chalcopyrite veinlets filling fractures and pyrite-sphalerite veins as at 3170'.
3160	10	100%	18742	.32						
3170	10	100%	18743	.09						
3173							Fault Zone		Chlorite-clay-pyrite.	Pyrite and minor chalcopyrite.
3178							Diabase	Dense, black, cut by occasional veinlets.	Magnetite-biotite-chlorite and local quartz-sericite-pyrite.	Pyrite and minor chalcopyrite in occasional veins; very rare disseminated pyrite.
3180	10	100%	18744	.10						
3190	10	100%	18745	.14						½" chalcopyrite-quartz-sphalerite vein at 3190'
3194							HORNFELS		Quartz-sericite-pyrite with chlorite.	Pyrite in veinlets and disseminated along very numerous close-spaced fractures; local chalcopyrite.
3200	10	100%	18746	.28						
3210	10	100%	18747	.22						
3217							Breccia	Hornfels and diabase.	Chlorite-clay-minor magnetite.	Pyrite and minor chalcopyrite in veinlets and lining occasional hairline fractures.
3220	10	100%	18748	.11						

District Harshaw-Red Mountain   Hole Number DDH-142   Page Number 31

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
3224								Breccia	Andesite and hornfels fragments cut by numerous veinlets; ore is shattered and soft.	Clay-chlorite-pyrite with quartz and biotite in veinlets.	Pyrite and chalcopyrite veinlets with minor disseminated chalcopyrite.
3230	10	100%	18749	.17							
3240	10	100%	18750	.12							
3250	10	100%	18751	.17				Andesite or Diabase	Black, hard, dense; cut by numerous hairline fractures.	Chlorite-magnetite-biotite	Pyrite.
3260	10	100%	18752	.10							
3264								Breccia	Mostly hornfels with some andesite; medium-grey.	Clay-chlorite-pyrite with minor magnetite with secondary orthoclase and biotite along fractures.	Pyrite and chalcopyrite in veinlets and along hairline fractures.
3270	10	100%	18753	.23							
3275	5	100%	18754	.31							Prominent ¼" chalcopyrite vein at 3275'.
3280	5	100%	18755	.61							
3285	5	100%	18756	.15							
3290	5	100%	18757	.10							
3295	5	100%	18758	.14							
3300	5	100%	18759	.11				Breccia	Medium pinkish grey, massive, hard.	Secondary orthoclase becomes more abundant; minor anhydrite noted coating a few fractures.	Chalcopyrite and pyrite in veinlets and associated with secondary orthoclase; local molybdenite in vuggy quartz veins.
3305	5	100%	18760	.27							
3310	5	100%	18761	.29							
3315	5	100%	18762	.15							
3320	5	100%	18763	.14							
3325	5	100%	18764	.08							
3330	5	100%	18765	.11				Breccia	Medium-pinkish-grey, massive, hard.	More abundant secondary orthoclase and biotite with minor anhydrite coating fractures.	Pyrite and chalcopyrite in veinlets.
3335	5	100%	18766	.15							

District Harshaw-Red Mountain   Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays		Rock Type	Rock Description	Alteration	Mineralization
				Cu	Mo				
3340	5	100%	18767	.18		Breccia	Hornfels and andesite	Hornfels altered to secon-	Pyrite-chalcopyrite veinlets and filling
3345	5	100%	18768	.13			fragments in andesite	dary orthoclase with ande-	hairline fractures.
							matrix. Dark-grey to	site altered to biotite,	
3350	5	100%	18769	.12			pink.	magnetite and chlorite.	Chalcopyrite-sphalerite veinlets at 3352'
3355	5	100%	18770	.25				Quartz-pyrite-anhydrite	
								veinlets with sericite	Chalcopyrite-bornite-chalcocite with
3360	5	100%	18771	.08				envelopes.	molybdenite at 3354'.
3365	5	100%	18772	.11					
3366						Breccia	Medium-pinkish-grey	POTASSIC ALTERATION. Quartz-	Chalcopyrite and pyrite in veinlets and
							¼ to 1" angular frag-	orthoclase-biotite with an-	disseminated with local molybdenite.
3370	5	100%	18773	.13			ments in fine-grained	hydrite blebs and in quartz-	
3375	5	100%	18774	.14			matrix.	pyrite veinlets.	
3380	5	100%	18775	.20					
3382							Smaller fragments with		Fewer veinlets, extremely fine-grained
3385	5	100%	18776	.13			more space between.		pyrite disseminated throughout rock.
3390	5	100%	18777	.15					
3395	5	100%	18778	.12					
3397						Breccia	Dark, pinkish-grey;	Quartz-orthoclase-biotite	Chalcopyrite and pyrite in quartz-anhydrite
							more andesite fragments.	with anhydrite; magnetite	veinlets and disseminated along fractures.
3400	5	100%	18779	.11				in andesitic fragments.	
3405	5	100%	18780	.26					
3410	5	100%	18781	.27		Diabase or	Black, dense, massive;	Biotite-magnetite-quartz	Reduced sulfide content with no disseminated
3415	5	100%	18782	.12		Andesite	cut by occasional vein-	with anhydrite.	sulfides. Pyrite greater than chalcopyrite.
							lets.		
3420	5	100%	18783	.03					

District Harshaw-Red Mountain   Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
3420								Breccia	Mostly andesite with occasional fragments of hornfels; dark grey, cut by frequent veinlets.	Biotite-magnetite-chlorite with quartz and anhydrite.	Pyrite and chalcopyrite in thin veinlets only; no disseminated sulfides.
3425	5	100%	18784	.08							
3430	5	100%	18785	.11							
3435	5	100%	18786	.09							
3436										1' quartz-sericite-pyrite zone.	½" pyrite-chalcopyrite veinlet.
3440	5	100%	18787	.43							¼" chalcopyrite vein at 3444.
3445	5	100%	18788	.20							
3450	5	100%	18789	.28					Medium-pinkish-grey, hornfels in andesite groundmass.	Quartz-orthoclase-anhydrite-biotite with local sericite along vein zones.	Pyrite and chalcopyrite both disseminated and in veinlets. Better-grade chalcopyrite associated with anhydrite-quartz-biotite veinlets.
3455	5	100%	18790	.23							
3457									Medium to dark grey, more massive.	Quartz-orthoclase with minor biotite and anhydrite.	Reduced sulfides, only in veinlets.
3460	5	100%	18791	.12							
3465	5	100%	18792	.11							
3470	5	100%	18793	.15							
3475	5	100%	18794	.20							Veinlets are more numerous, with anhydrite, chalcopyrite and local molybdenite.
3480	5	100%	18795	.15							
3485	5	100%	18796	.17							
3490	5	100%	18797	.15							
3495	5	100%	18798	.35						1 foot zone of intense chloritization at 3498'.	
3500	5	100%	18799	.16							

District Harshaw-Red Mountain Hole Number DDH-142 Page Number 34

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
3505	5	100%	18800	.19				Breccia	Medium pinkish grey	Quartz-orthoclase with	Chalcopyrite and pyrite disseminated
									hornfels fragments in	biotite and anhydrite and	and in quartz anhydrite-biotite veinlets;
3510	5	100%	18801	.14					andesite matrix.	minor magnetite.	a $\frac{1}{4}$" veinlet at 3518', others are smaller.
3515	5	100%	18802	.17							
3520	5	100%	18803	.27							
3525	5	100%	18804	.19							
3527								Andesite or	Black to dark grey	Biotite-magnetite-chlorite	Chalcopyrite and pyrite in quartz vein-
								Diabase	with quartz-pyrite	with quartz-anhydrite-	lets only; no disseminated sulfides.
3530	5	100%	18805	.12				Breccia	filled fractures.	pyrite veinlets.	
3535	5	100%	18806	.11							
3540	5	100%	18807	.11							
3545	5	100%	18808	.03							
3550	5	100%	18809	.15							
3555	5	100%	18810	.09							
3560	5	100%	18811	.22							
3565	5	100%	18812	.10							
3570	5	100%	18813	.09							
3575	5	100%	18814	.25							
3580	5	100%	18815	.12							
3585	5	100%	18816	.10							
3590	5	100%	18817	.04							

District Harshaw-Red Mountain | Hole Number DDH-142 | Page Number 35

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
3592								Hornfels	Banded pinkish grey	Quartz-orthoclase-biotite	Chalcopyrite in pyrite veinlets and locally
								Breccia	hornfels fragments in	with sericite anhydrite and	disseminated.
3595	5	100%	18818	.21					andesite matrix.	pyrite.	
3600	5	100%	18819	.06							
3605	5	100%	18820	.14				Andesite	Black or dark grey,	Biotite-magnetite-chlorite	No disseminated sulfides; occasional
								or Diabase	massive with scattered	with anhydrite and quartz.	pyrite and chalcopyrite in quartz and
3610	5	100%	18821	.05				Breccia	veinlets; occasional		anhydrite veinlets.
									fragments of hornfels.		
3615	5	100%	18822	.04							
3620	5	100%	18823	.18							
3625	5	100%	18824	.11							
3630	5	100%	18825	.04							
3635	5	100%	18826	.02							
3640	5	100%	18827	.04							
3645	5	100%	18828	.04							
3650	5	100%	18829	.06							
3653								Breccia	Medium grey, fine-	Quartz-orthoclase-biotite	Pyrite and minor chalcopyrite along frac-
									grained, small frag-	with anhydrite and minor	tures and in quartz-anhydrite veinlets and
3655	5	100%	18830	.12					ments in siliceous	magnetite.	disseminated throughout rock.
									andesitic matrix.		
3660	5	100%	18831	.21							
3665	5	100%	18832	.12							
3670	5	100%	18833	.20							
3675	5	100%	18834	.17							
3680	5	100%	18835	.17							

District Harshaw-Red Mountain   Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
3685	5	100%	18836	.15		Andesite	Medium pinkish grey, partially brecciated.	Quartz-orthoclase-biotite with anhydrite and weak magnetite.	Finely disseminated pyrite and chalcopyrite with chalcopyrite and pyrite in anhydrite veinlets.
3690	5	100%	18837	.19					
3695	5	100%	18838	.17					
3700	5	100%	18839	.20					
3705	5	100%	18840	.10					Chalcopyrite-pyrite disseminated throughout 3-5% sulfides..
3710	5	100%	18841	.31					
3712						Andesite	Medium to light grey, cut by prominent quartz veins.	Quartz-orthoclase-sericite with pyrite-anhydrite and biotite; no magnetite.	3-5% disseminated pyrite and chalcopyrite with frequent veinlets of pyrite and chalcopyrite.
3715	5	100%	18842	.38					
3720	5	100%	18843	.27					
3725	5	100%	18844	.31					Increasing chalcopyrite to pyrite ratio.
3730	5	100%	18845	.53				Abundant quartz with chlorite after biotite, secondary orthoclase and anhydrite.	Chalcopyrite greater than pyrite, occurring as 3% disseminated sulfides
3735	5	100%	18846	.93					
3740	5	100%	18847	1.12					
3745	5	100%	18848	.44					
3749	4	90%	18849	.36			Siliceous pebbles with softer matrix worn away.	Quartz	Minor sulfides in quartz.
3758	9	10%	18850	.14		Andesite	Dark grey; fine-grained.	Quartz-orthoclase	Very fine-grained sulfides disseminated throughout; less than 2%, with local pyrite veinlets at 2" intervals. ¼" quartz-pyrite-anhydrite veinlets at 3765'.
3765	7	100%	18851	.13					
3770	5	100%	18852	.11					
3775	5	100%	18853	.19					

District Harshaw-Red Mountain　　Hole Number DDH-142　　

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
3780	5	100%	18854	.11				Andesite	Dark grey, fine-grained with local brecciation.	Quartz-orthoclase-anhydrite with minor magnetite.	Minor disseminated pyrite and chalcopyrite; also sulfides lining hairline fractures.
3784								Breccia	Dark grey matrix with pinkish-grey fragments.	Orthoclase selectively replacing certain fragments.	Minor disseminated pyrite with some chalcopyrite-pyrite veinlets.
3785	5	100%	18855	.05							
3790	5	100%	18856	.11							
3795	5	100%	18857	.14							
3800	5	100%	18858	.14							
3803								Breccia	Medium to dark-grey, cut by frequent thin veinlets.	Quartz-orthoclase-anhydrite with minor magnetite and biotite.	Pyrite and chalcopyrite filling fractures and disseminated throughout, prominent chalcopyrite veinlets at 3814', 3819', 3823', 3826', and 3831'. Molybdenite in chalcopyrite-anhydrite veinlets.
3805	5	100%	18859	.06							
3810	5	100%	18860	.13							
3815	5	100%	18861	.18							
3820	5	100%	18862	.14							
3825	5	100%	18863	.11							
3830	5	100%	18864	.18					Occasional fragments of diabase.	Local quartz-sericite-pyrite veinlets.	
3835	5	100%	18865	.10							
3840	5	100%	18866	.08							Molybdenite in anhydrite-chalcopyrite veinlets at 3842'.
3843								Vein Zone	Light grey, fine-grained.	Quartz-sericite-pyrite.	Pyrite and chalcopyrite in veinlets and disseminated.
3845	5	100%	18867	.15							
3848								Breccia	Medium grey, fine-grained.	Quartz-orthoclase-magnetite-anhydrite.	Pyrite and chalcopyrite in veinlets only.
3850	5	100%	18868	.14							

District Harshaw-Red Mountain   Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
3853						Vein Zone	Light grey, mostly	Quartz-sericite-pyrite with	Pyrite finely disseminated and in vein-
							medium-grained.	minor chlorite and magnetite.	lets. 1" pyrite-chalcopyrite-sphalerite
3855	5	100%	18869	.09					vein at 3860'.
3860	5	100%	18870	.09					
3864						Breccia	Medium to dark-grey,	Quartz-orthoclase-biotite-	Pyrite-anhydrite veinlets with minor
							fine-grained fragments.	magnetite with anhydrite	chalcopyrite.
3865	5	100%	18871	.13				veinlets.	
3868						Breccia	Light to medium grey	Quartz-orthoclase-anhydrite	Pyrite and chalcopyrite in veins and
							fine-grained, cut by	cut by vein zones of quartz-	disseminated in alteration envelopes
3870	5	100%	18872	.10			prominent vein zones.	sericite-pyrite envelopes	such as 3868', 3880', and 3882'.
								around quartz-pyrite veins.	
3875	5	100%	18873	.11					
3880	5	100%	18874	.09					
3885	5	100%	18875	.07					
3890	5	100%	18876	.10		Breccia	Medium to dark pinkish	Biotite-magnetite-ortho-	Pyrite and minor chalcopyrite in veinlets
							grey, ½" fragments in	clase with local anhydrite	with minor molybdenite; disseminated
3895	5	100%	18877	.09			fine-grained matrix of	veinlets.	sulfides rare. Molybdenite in prominent
							andesite.		quartz veins at 3896'.
3900	5	100%	18878	.07					
3905	5	100%	18879	.06				Secondary orthoclase, bio-	
								tite and quartz growths	
3910	5	100%	18880	.11				are almost intrusive in	Prominent quartz-sericite-pyrite vein
								appearance.	zone at 3914'.
3915	5	100%	18881	.11					Significant molybdenum and chalcopyrite
									in anhydrite veinlet at 3916 and 3924'.
3920	5	100%	18882	.05					
3925	5	100%	18883	.27					
3930	5	100%	18884	.13					

District Harshaw-Red Mountain   Hole Number DDH-142   Page Number 39

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Assays Mo	Rock Type	Rock Description	Alteration	Mineralization
3933						Andesite	Dark grey to black.	Chlorite-magnetite-biotite with superimposed quartz-wericite-pyrite envelopes adjacent to sulfide veinlets.	Pyrite-chalcopyrite and rare molybdenite in veinlets.
3935	5	100%	18885	.19					
3940	5	100%	18886	.09					
3945	5	100%	18887	.26					
3946								½ to ¼" vertical vein with adjacent alteration envelope.	Pyrite veinlet with chalcopyrite tarnish.
3950	5	100%	18888	.10					
3951						Breccia	Dark to medium grey, fine-grained, cut by vein zones.	Quartz-orthoclase-magnetite-biotite with clay, sericite and pyrite veinlets.	Pyrite and minor chalcopyrite in veinlets, with anhydrite; local tennantite and molybdenite in quartz-sulfide veins.
3955	5	100%	18889	.16					
3960	5	100%	18890	.18					
3965	5	100%	18891	.16					
3970	5	100%	18892	.14					
3975	5	100%	18893	.11					
3980	5	100%	18894	.13		Breccia	Fine-grained, medium pinkish grey, cut by hairline sulfide veinlets.	Quartz-orthoclase-biotite with magnetite.	Pyrite and chalcopyrite.
3985	5	100%	18895	.17					
3990	5	100%	18896	.29				Pegmatitic quartz-orthoclase at 3990'.	
3995	5	100%	18897	.11					Quartz-chalcopyrite-bronite at 3996'.
3998						Breccia	Light to medium grey.	Quartz-orthoclase-anhydrite-biotite.	Pyrite and chalcopyrite in veinlets associated with anhydrite and quartz. Minor tennentite and rare molybdenum.
4000	5	100%	18898	.19					
4005	5	100%	16900	.11					
4010	5	100%	16901	.16					

District Harshaw-Red Mountain Hole Number DDH-142

Depth	Int.	%Core Rcvy	Samp. No.	Assays Cu	Mo			Rock Type	Rock Description	Alteration	Mineralization
4010								Breccia	Medium to dark pinkish grey; fine-grained.	Quartz-orthoclase-magnetite with local biotite, anhydrite and chlorite. Local zones of pegmatitic quartz orthoclase.	Chalcopyrite and pyrite in hairline veinlets and larger veins associated with quartz and orthoclase.
4015	5	100%	16902	.12							
4020	5	100%	16903	.15							
4025	5	100%	16904	.12							
4028								Breccia	Medium to light grey.	Quartz-orthoclase-pyrite.	Pyrite veinlets, pyrite-chalcopyrite-quartz veins as at 4030', and minor disseminated pyrite and chalcopyrite.
4030	5	100%	16905	.20							
4035	5	100%	16906	.17							
4040	5	100%	16907	.17							
4045	5	100%	16908	.22							
4050	5	100%	16909	.18				Breccia	Dark grey; fine-grained.	Quartz-orthoclase-magnetite.	Pyrite and chalcopyrite in hairline veinlets only.
4055	5	100%	16910	.09							
4056									Medium pinkish grey, mottled, cut by numerous veinlets.	Quartz-orthoclase-anhydrite.	Chalcopyrite and pyrite in quartz-anhydrite veins, with tennantite.
4060	5	100%	16911	.25							
4065	5	100%	16912	.28							
4070	5	100%	16913	.26							
4072									Dark to medium grey, very fine-grained.	Orthoclase, magnetite, biotite with quartz and minor anhydrite.	Chalcopyrite-pyrite along hairline veinlets.
4075	5	100%	16914	.22							
4080	5	100%	16915	.16							
4085	5	100%	16916	.19							
4090	5	100%	16917	.18							
4091								Quartz Vein	Light grey vein at 4091 to 4093'.	Quartz-orthoclase-pyrite	Pyrite veins with minor chalcopyrite and bornite tarnish and some tennantite.
4095	5	100%	16918	.09							
4100	5	100%	16919	.07				Vein Zone	Light grey vertical pyrite vein enclosed in quartz from 4100 to 4106'.	Quartz-orthoclase pyrite adjacent to vein.	
4105	5	100%	16920	.55							

District Harshaw - Red Mountain Hole Number DDH-142

Depth	Int.	% Core Rcvy	Samp. No.	Assays Cu	Assays Mo	Rock Type	Rock Description	Alteration	Mineralization
4106						Breccia	Variety of fragments include andesite, hornfels and porphyry.	Quartz-orthoclase-magnetite with anhydrite veinlets.	Pyrite and chalcopyrite in veins, no disseminated sulfides.
4110	5	100%	16921	.12					
4115	5	100%	16922	.18				Pegmatitic quartz orthoclase along vein structure at 4115 to 4117; prominent anhydrite at 4119.	Disseminated sulfides adjacent to veins only.
4120	5	100%	16923	.24					
4121						Vein	($\frac{1}{4}$" vertical pyrite-anhydrite vein bounded by 1" wide borders of sericite-anhydrite, pyrite-chalcopyrite.)		
4125	5	100%	16924	.27					
4130	5	100%	16925	.17					
4135	5	100%	16926	.10					
4136							(3" quartz-pyrite vein with minor chalcopyrite.)		
4140	5	100%	16927	.16					
4145	5	100%	16928	.09					Several closely spaced chalcopyrite veinlets at 4146'.
4150	5	100%	16929	.23					
4155	5	100%	16930	.15					
4158						Fault Zone	Soft, gougey material containing andesite fragments.	Clay, chlorite-calcite with magnetite and biotite in andesite.	Occasional quartz-anhydrite, pyrite veinlets. Several anhydrite-chalcopyrite veinlets at 4162'.
4160	5	100%	16931	.10					
4165	5	100%	16932	.13					
4170	5	100%	16933	.66					
4175	5	100%	16934	.73		Andesite	Black, dense, hard, felty texture.	Magnetite-biotite-chlorite.	Quartz-anhydrite veinlets carry pyrite; minor chalcopyrite.
4180	5	100%	16935	.06					
4185	5	100%	16936	.03					
4190	5	100%	16937	.06					

District Harshaw-Red Mountain Hole Number DDH-142

Depth	Int.	% Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
4195	5	100%	16938	.13		Andesite	Black, cut by veinlets and fault zones.	Chlorite-calcite-clay alteration of gouge; chlorite-magnetite-biotite alteration of rock with quartz-sericite-anhydrite and pyrite in veinlets.	Pyrite and chalcopyrite in veinlets.
4200	5	100%	16939	.37					
4205	5	100%	16940	.03		Andesite	Black, dense, hard, felty texture out by veinlets and hairline fractures.	Magnetite-chlorite-biotite.	Quartz-anhydrite-chalcopyrite in hairline veinlets; approximately 1 per foot.
4210	5	100%	16941	.08					
4215	5	100%	16942	.04					
4220	5	100%	16943	.04					
4225	5	100%	16944	.06					
4230	5	100%	16945	.05					1" quartz-chalcopyrite vein at 4231'.
4235	5	100%	16946	.06					Hairline veinlets more abundant below 4235'.
4240	5	100%	16947	.14					
4245	5	100%	16948	.13					
4250	5	100%	16949	.15					$\frac{1}{4}$" quartz-chalcopyrite vein at 1253'.
4255	5	100%	16950	.16					
4260	5	100%	16951	.14					
4265	5	100%	16952	.12					
4270	5	100%	16953	.49					$\frac{1}{4}$" chalcopyrite vein at 2469.5'.
4275	5	100%	16954	.19					Vertical $\frac{1}{4}$" quartz-anhydrite-pyrite-chalcopyrite vein at 4278'-4782'.
4280	5	100%	16955	.36					
4285	5	100%	16956	.62					
4290	5	100%	16957	.11					

District Harshaw-Red Mountain Hole Number DDH-142

Depth	Int.	% Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
4294						Andesite	Medium-grey, with flood-	Quartz-orthoclase-anhy-	Pyrite veinlets.
4295	5	100%	16958	.10			ing of alteration miner-	drite with clay, sericite,	
4299							als.	and abundant fine-grained	Extremely fine-disseminated pyrite.
4300	5	100%	16959	.14				pyrite. Magnetite present	Pyrite veinlets.
								locally.	
4305	5	100%	16960	.12					
4309						Diabase	Dark gray, dense, dike-	Quartz-orthoclase-biotite.	Chalcopyrite-pyrite veinlets.
4310	5	100%	16961	.20			like zone.		
4312						Fault Gouge		Chlorite-calcite-magnetite.	Pyrite veinlets; ½" pyrite-quartz
									anhydrite veinlet at 4314'.
4315	5	100%	16962	.12		Diabase or Ande-	Dense, medium grey.	Quartz-orthoclase-biotite.	Chalcopyrite smeared along fractures.
						site			
4317						Fault Gouge	Medium to light grey.	Chlorite-calcite-magnetite.	Minor pyrite and chalcopyrite.
4319									
4320	5	100%	16963	.12		Andesite or	Dark grey, dense, cut by	Magnetite-biotite-anhy-	Chalcopyrite in veinlets and locally
						Diabase Breccia	numerous hairline vein-	drite-orthoclase with quartz	in quartz-sericite-pyrite veinlets.
4325	5	100%	16964	.33			lets.	pyrite and locally sericite.	
4330	5	100%	16965	.26					Minor disseminated chalcopyrite below
									4332'; most abundant at 4339'.
4335	5	100%	16966	.41					
4340	5	100%	16967	.50					
4345	5	100%	16968	.42					Prominent chalcopyrite vein at 4345'.
4350	5	100%	16969	.33					
4355	5	100%	16970	.10					
4359									Sharp decrease in disseminated sulfide
4360	5	100%	16971	.58					content, veinlets are farther apart.
								1" quartz-pyrite vein at	
4365	5	100%	16972	.29				4364'; ½" quartz-pyrite-	
								purple anhydrite veinlet	
4370	5	100%	16973	.09				at 4371'.	

District Harshaw-Red Mountain　　Hole Number DDH-142　　

Depth	Int.	% Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
4375	5	100%	16974	.16		Andesite or Diabase Breccia	Dark grey, massive rock cut by occasional hair-line veinlets.	Magnetite-biotite-chlorite-anhydrite with anhydrite veinlets.	Chalcopyrite and pyrite smeared along occasional hairline veinlets; rare quartz, chalcopyrite-pyrite veinlets.
4380	5	100%	16975	.19					
4385	5	100%	16976	.38					
4390	5	100%	16977	.25					
4395	5	100%	16978	.25					
4396						Fault Gouge		Chlorite-calcite.	
4398						Andesite or Diabase Breccia	Medium grey, fine-grained very siliceous; no mafic minerals.	Quartz-orthoclase-pyrite; rock is well bleached. Locally, sericite and anhydrite coating fractures.	Quartz-pyrite-chalcopyrite veinlets and minor disseminated sulfides.
4400	5	100%	16979	.14					
4405	5	100%	16980	.06					
4410	5	100%	16981	.13			Light grey, very fine-grained. Siliceous with no mafic minerals.	Quartz-orthoclase-pyrite with local sericite; occasional anhydrite veinlets.	Abundant pyrite, 7-10% disseminated and in veins, with local chalcopyrite.
4415	5	100%	16982	.19					
4420	5	100%	16983	.07					
4425	5	100%	16984	.08					
4430	5	100%	16985	.10					
4435	5	100%	16986	.12					
4440	5	100%	16987	.10					Chalcopyrite and chalcocite tarnish more common at 4440 and 4444'.
4445	5	100%	16988	.20					
4450	5	100%	16989	.10			Medium grey.	Minor chlorite.	Reduced sulfide content, pyrite and minor chalcopyrite disseminated along fractures with increased chalcopyrite to pyrite ratio.
4455	5	100%	16990	.05					
4460	5	100%	16991	.18					

Depth	Int.	% Core Rcvy	Samp. No.	Cu	Assays Mo			Rock Type	Rock Description	Alteration	Mineralization
4463								Breccia	Light grey, coarse-grain-	Quartz-orthoclase-	Pyrite weakly disseminated and in
									ed fragments completely	pyrite with minor sericite.	quartz veinlets, blebs of chalco-
4465	5	100%	16992	.25					altered.		pyrite at 4463'.
4470	5	100%	16993	.06							
4475	5	100%	16994	.10							
4480	5	100%	16995	.10							
4482											
4485	5	100%	16996	.08					Medium to dark grey,	Quartz-orthoclase-magnetite.	Very fine-grained disseminated pyrite
									rock is mostly quartz.		and occasional hairline pyrite veinlets.
4490	5	100%	16997	.10					No visible texture.		
4495	5	100%	16998	.13							
4496								Breccia	$\frac{1}{4}$" to 2" fragments in	Quartz-orthoclase-pyrite	Chalcopyrite veinlet at 4498'.
4500	5	100%	16999	.27					fine-grained matrix.		
4504									Light to medium grey,	Orthoclase-quartz-pyrite	
4505	5	100%	19301	.17					cut by families of thin	with local zones of seri-	
									parallel quartz veins.	cite coated fractures.	
4510	5	100%	19302	.11							$\frac{1}{2}$" quartz-chalcopyrite-pyrite-sphalerite-
											chalcocite vein at 4511'.
4515	5	100%	19303	.19							
4520	5	100%	19304	.15							Vertical vein of quartz-molybdenite-
											pyrite at 3524'.
4525	5	100%	19305	.19							
4530	5	100%	19306	.19							
4532								Andesite or	Dark grey	Quartz-magnetite-ortho-	Minor disseminated pyrite and occasion-
4535	5	100%	19307	.11				Diabase Breccia		clase.	al pyrite veinlets with associated
											chalcopyrite.
4540	5	100%	19308	.19							
4545	5	100%	19309	.10							Chalcopyrite disseminated along
											fracture at 4548'.
4550	5	100%	19310	.16							

Depth	Int.	% Core Rcvy	Samp. No.	Cu	Assays Mo			Rock Type	Rock Description	Alteration	Mineralization
4555	5	100%	19311	.15				Brecciated Andesite or Diabase	Medium to dark grey, hard, dense, massive.	Quartz-magnetite, orthoclase. Anhydrite, orthoclase-pyrite vein at 4566'.	Minor pyrite and chalcopyrite along fractures, with no disseminated sulfides.
4560	5	100%	19312	.13							
4565	5	100%	19313	.15							
4570	5	100%	19314	.12						Quartz-orthoclase and chlorite after biotite in vein zone.	Scattered pyrite in veins.
4572										Quartz-sericite-pyrite.	
4577								Diabase Dike	Black, dense, massive plagioclase.	Magnetite-orthoclase-anhydrite-quartz and pyrite veinlets.	Chalcopyrite and bornite with molybdenite in anhydrite veins. Pyrite veins bordered by zones of sericite.
4580	10	100%	19315	.23							
4590	10	100%	19316	.26							
4600	10	100%	19317	.06							
4610	10	100%	19318	.11							
4620	10	100%	19319	.21							
4630	10	100%	19320	.17							
4640	10	100%	19321	.11							
4650	10	100%	19322	.14							
4655									Core is badly shattered, previous texture and minerals completely obliterated.	Chlorite-clay-pyrite with sericite.	Pyrite and chalcopyrite in scattered blebs and veinlets.
4660	10	100%	19323	.05							
4670	10	100%	19324	.17							
4675										Sericite-clay-pyrite with abundant anhydrite.	Chalcopyrite replacing anhydrite.

District Harshaw-Red Mountain Hole Number DDH-142

Depth	Int.	% Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
4679						Diabase	Black, dense, massive,	Magnetite-quartz-ortho-	Pyrite and chalcopyrite in veinlets
							cut by occasional thin	clase.	replacing anhydrite.
4680	10	100%	19325	.47			anhydrite veins.		
4685						Breccia	Andesite or diabase	Quartz-orthoclase anhydrite	Pyrite finely disseminated along
							fragments in fine-grain-	with minor sericite and	occasional hairline fractures and as
4690	10	100%	19326	.14			ed matrix. Rock is mas-	pyrite.	larger blebs in zones of quartz-
							sive, dark to medium		sericite or quartz-anhydrite.
4700	10	100%	19327	.08			grey, cut by numerous		
							veinlets.		
4710	10	100%	19328	.09				Prominent quartz-sericite-	Local molybdemite in pyrite blebs,
								pyrite zones at 4716, 4734,	calcite-pyrite-sphalerite vein at 4759'.
4720	10	100%	19329	.12				4742, 4764, and 4784.	
4730	10	100%	19330	.06					
4740	10	100%	19331	.10					
4750	10	100%	19332	.09					
4760	10	100%	19333	.12					
4770	10	100%	19334	.15					Increase in chalcopyrite content at
									4787'.
4780	10	100%	19335	.08					
4789						Diabase Dike	Black, massive.	Magnetite-biotite-quartz.	Chalcopyrite filling thin fractures.
4790	10	100%	19336	.18					
4793						Andesite Breccia	Dark greenish grey.	Chlorite-clay-magnetite	Minor pyrite in thin veins and dissem-
4800	10	100%	19337	.33				with minor anhydrite, quartz	inated with chalcopyrite.
								and sericite zones, locally	
4810	10	100%	19338	.35				carry secondary biotite.	
4820	10	100%	19339	.13					
4824						Diabase Dike	Dense, black, massive.	Biotite-magnetite-ortho-	Chalcopyrite in occasional quartz
4830	10	100%	19340	.10				clase.	or anhydrite veins.
4840	10	100%	19341	.11					

Depth	Int.	% Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
4846						Andesite Breccia	Medium grey, bleached,	Quartz-magnetite-ortho-	Chalcopyrite and pyrite in anhydrite
4850	10	100%	19342	.09			cut by frequent veinlets.	clase with anhydrite and	veins. Numerous hairline sulfide vein-
								biotite, and local sericite.	lets but no disseminated sulfides.
4860	10	100%	19343	.15				Occasional large poikilitic	
								growths of orthoclase.	
4870	10	100%	19344	.16					
4880	10	100%	19345	.09					
4890	10	100%	19346	.16		Andesite or	Medium to dark grey,	Quartz-orthoclase-chlorite	Pyrite and chalcopyrite in quartz-
						Diabase Breccia	very siliceous and	with local sericite-pyrite	anhydrite-sericite veins.
4900	10	100%	19347	.17			fine-grained.	-anhydrite veins.	
4910	10	100%	19348	.10		Gouge		Clay-chlorite-pyrite.	
4916						Breccia	Grey, siliceous, fine-	Quartz-orthoclase-magnetite-	Pyrite-chalcopyrite and minor moly-
							grained matrix surround-	chlorite with sericite and	bdenite in 1-2" quartz-anhydrite-
4920	10	100%	19349	.14			ing scattered pebbles	anhydrite.	sericite veinlets as at 4932', 4943',
							of andesite or diabase.		and in thin quartz-anhydrite veinlets.
4930	10	100%	19350	.13					
4940	10	100%	19351	.13					
4950	10	100%	19352	.10					
4960	10	100%	19353	.07					
4961									Massive sphalerite in quartz-sericite-
4970	10	100%	19354	.20					pyrite vein.
4980	10	100%	19355	.08					
4990	10	100%	19356	.07					
5000	10	100%	19357	.05					
5010	10	100%	19358	.06					Chalcopyrite-molybdenite vein at
5016						Breccia	Original rock completely	Quartz-sericite-pyrite.	5012'.
5020	10	100%	19359	.18			destroyed by alteration.		
5030	10	100%	19360	.16			Fragments of siliceous	Quartz-pyrite-calcite vein	
							fine-grained rock remains.	at 5036'.	

District Harshaw-Red Mountain　　Hole Number DDH-142　　

Depth	Int.	% Core Rcvy	Samp. No.	Assays Cu	Mo	Rock Type	Rock Description	Alteration	Mineralization
5038						Andesite or	Black, dense, massive.	Magnetite-biotite-anhydrite	Pyrite and chalcopyrite on hairline
5040	10	100%	19361	.10		Diabase Dike		with minor chlorite and	fractures and in 1/8" sulfide veinlets.
								calcite.	
5050	10	100%	19362	.22					
5060	10	100%	19363	.30					
5067							Core is badly broken;	Intense chlorite-calcite	Pyrite with very minor chalcopyrite
5070	10	100%	19364	.19			black to dark green.	alteration.	along fractures.
5080	10	100%	19365	.13					
5088						Vein zone.	White to light grey.	Quartz-sericite-pyrite with	
5090	10	100%	19366	.19				local chlorite and anhydrite.	
5092						Breccia	Light grey, shattered,	Quartz-sericite-pyrite with	10% fine-grained pyrite at 5092-5094'.
5100	10	100%	19367	.17			cut by numerous frac-	anhydrite and chlorite.	Pyrite and minor chalcopyrite in thin
							tures and veinlets.		veinlets.
5110	10	100%	19368	.09					
5115							Large fragments of	Quartz-orthoclase-anhydrite	
5120	10	100%	19369	.05			siliceous rock.	with increasing chlorite.	
5130	10	100%	19370	.11					
5134								Chlorite-sericite-calcite.	Fine-grained pyrite and chalcopyrite
5140	10	100%	19371	.28					disseminated along occasional fractures.
5150	10	100%	19372	.23					
5156								Quartz-orthoclase-anhy-	Thin veinlets of pyrite and minor
5160	10	100%	19373	.15				drite.	chalcopyrite; occasional massive veins
									of quartz-sphalerite-galena-pyrite
5170	10	100%	19374	.19					with minor chalcopyrite at 5164, 5176,
									5198' and anhydrite quartz-pyrite-
5180	10	100%	19375	.10					calcite veins.
5190	10	100%	19376	.09					
5200	10	100%	19377	.23					
5210	10	100%	19378	.04					
5220	10	100%	19379	.11					
5229	9	100%	19380	.07			TOTAL DEPTH		