



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
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September 30, 2002

Mr. James F. Lessard
Engineering Manager
Wharf Resources (USA), Inc.
HC 37 Box 811
Lead, South Dakota
57754-9710

RE: Acid Rock Drainage Prevention and Management Plan for Lower Deadwood
Formation and Precambrian rock units in Trojan Pit

Dear Jim,

Department review is complete on the Acid Rock Drainage Prevention and Management Plan (Plan) submitted in November, 2001, the plan appendix submitted in July 2002, and the associated Technical Revision to substitute the NAG pH procedure for the pyritic sulfur cutoff criteria required in the Acid Rock Drainage Management and Prevention Conditions to Mine Permit #464. Based on the review of this plan, supplementary data submitted in the appendix, and associated negotiations and discussions, the department grants approval for the plan and the associated Technical Revision with the following conditions:

1. Wharf shall complete static Net Acid Generation (NAG) tests and paste pH tests of all lower Deadwood formation and Precambrian rock units encountered in the Trojan Pit. At a minimum, these tests shall be completed on representative splits of 20' intervals from development drill hole samples located on a 50'x50' grid throughout the entire pit.
2. Based on a correlation of NAG results to Acid Base Accounting tests from 152 samples from the Lower Deadwood Formation, a NAG pH cutoff criterion of 5.0 is established (Fig. 1). In the event that Wharf encounters rock exhibiting a NAG pH of less than 5.0 in the 50'x50' development drill holes, this rock zone will be deemed a special management zone. Prior to mining the Special Management Zone, Wharf shall define the volume of the zone using additional NAG pH tests of blast holes surrounding the development drill hole(s), visual geologic inspection, mapping, and surface sample analyses as necessary.

3. Based on the NAG pH tests completed within the special management zone, a mean NAG pH value will be calculated as follows:

$$\bar{x} = -\log \left[\frac{1}{n} \sum_{i=1}^n 10^{-x_i} \right]$$

Where:

$\bar{x}$ = Average NAG pH of samples within Special Management Zone

n = Number of samples within Special Management Zone

i = Independent sample within Special Management Zone

x_i = NAG pH of independent sample

A Net Neutralization Potential (NNP) will be estimated for the special management zone based on the mean NAG pH value using the attached NAG pH-NNP correlation chart to determine base amendment requirements

4. All shot muck containing special management rock zones will be flagged in the field using colored pin flags or other method prior to mining.
5. All NAG pH values collected and any special management rock zones identified will be recorded on mine bench maps and assigned a unique tracking code or sample number. These maps will be constructed for each bench containing lower Deadwood Formation or Precambrian rocks, will be permanently stored in the mine office, and will be available for inspection by the department at any time.
6. Rock mined from any special management zones will be blended with net neutralizing rock to achieve a minimum 3:1 neutralization potential to acid potential ratio. Lime addition during the gold recovery process will not be included in calculation of the required 3:1 ratio.

The required amendment quantity will be calculated as follows:

$$Q_{BA} = \frac{-3Q_{SMZ} NNP_{SMZ}}{NNP_{BA}}$$

→ 4 for ore (3 for waste rock)

Where:

Q_{BA} = Quantity of required base amendment (tons)

NNP_{BA} = Estimated NNP of base amendment (t/kt CaCO_3 eq.)

Q_{SHZ} = Quantity of Special Handling Zone (tons)

NNP_{SMZ} = Estimated NNP of Special Management Zone (t/kt CaCO_3 eq)

7. The Net Neutralization Potential of the rock used for base amendment will be estimated as follows:

Lower Deadwood Formation: The Net Neutralization Potential of lower Deadwood Formation rock used for base amendment will be estimated based on the mean NAG pH of the rock volume using the NAG pH-NNP correlation chart shown as Figure 1. All lower Deadwood Formation rock used for base amendment shall have a NAG pH of greater than 7.0, correlating to a NP:AP ratio of greater than 3:1 as shown on Figure 1.

Intermediate and upper Deadwood Formation: The Net Neutralization Potential of the intermediate and upper Deadwood Formation will be estimated based on the existing ABA database for the respective rock units using geostatistical methods. Estimating parameters will be developed by Wharf Resources based on best professional judgement, and will be reported to the department along with the quarterly reports described below.

Intrusive porphyry rock units: Intrusive porphyry rock units will not be used as base amendment.

Precambrian rock units: Precambrian rock units will not be used as base amendment.

If the available volume or NNP proves insufficient to create the 3:1 ratio, other suitable base amendments will be required prior to mining.

8. A database will be developed and maintained containing the pre-mining location, volume, NAG pH, and estimated NNP of all special management rock zones. The database shall also contain records of all blending completed including the corresponding special management rock unit; the estimated NNP of the base amendment; the volume of the base amendment; pre-mining location of the base amendment; and the final location of the blended unit. This information will be submitted to the department on a quarterly basis.
9. Wharf shall prepare representative splits of -200 mesh sample pulps for all NAG pH samples. These representative splits shall be stored at the mine site until mine closure and adequately cataloged to allow retrieval of specific samples when requested by the department. At the department's request, Wharf shall provide duplicate sample pulps specified by the department for analysis at an independent third party lab at department expense.

NAG pH verses NNP

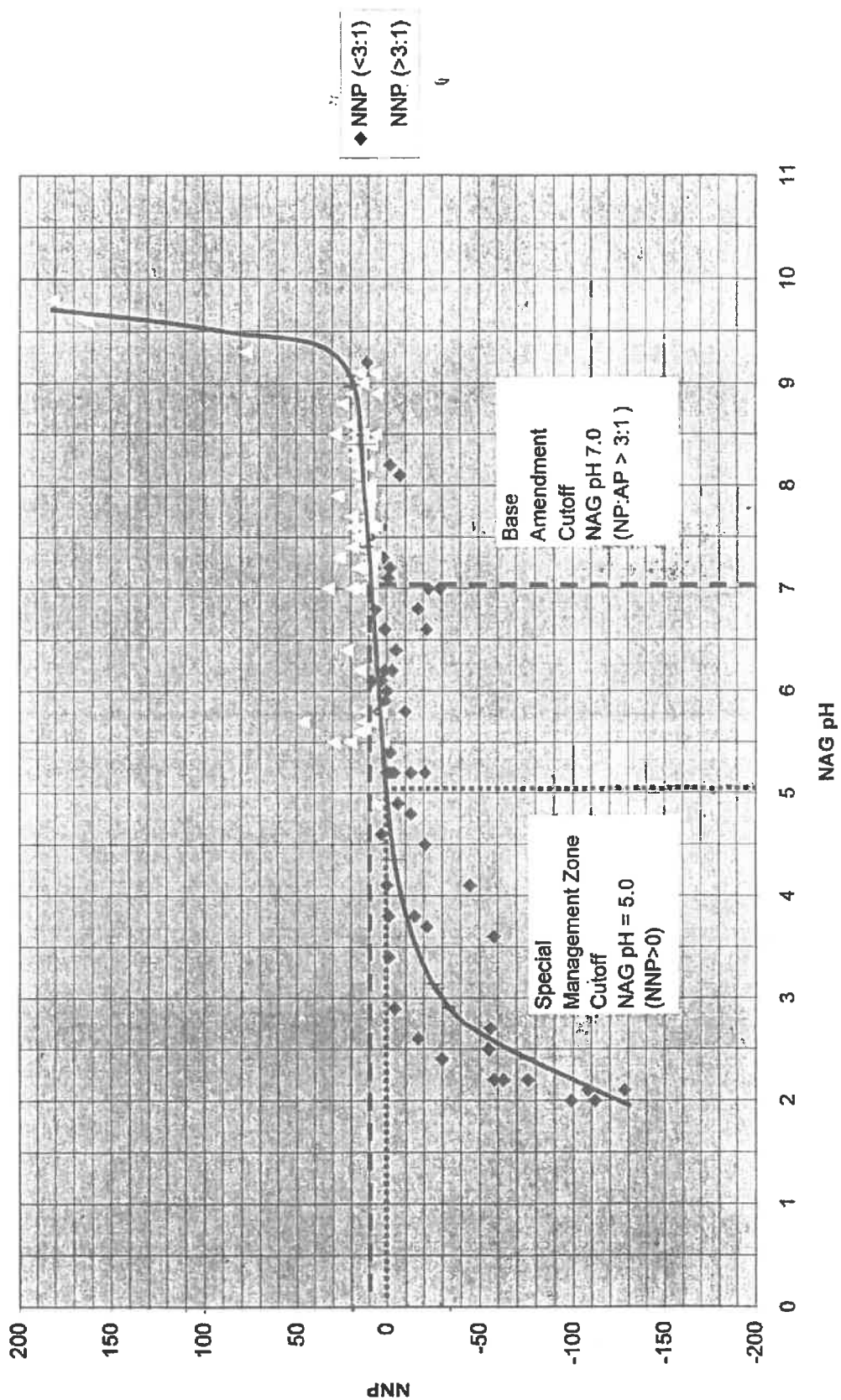


Figure 1. Correlation chart of calculated Net Neutralization Potential versus NAG pH showing correlation curve to be used for estimation of NNP for lower Deadwood Formation.

10. Wharf shall maintain quality assurance records for all internal NAG pH analyses including but not limited to pre-analysis pH of the hydrogen peroxide reagent, laboratory instrument calibration records, time and date of analyses, and the laboratory personnel completing the analyses. These records shall be available for inspection by the department at any time.
11. In conjunction with the fourth quarter report of each year, Wharf shall delineate any Special Management Zones that have been exposed in the ultimate pit walls or floors or are expected to be exposed in the following year. For the purpose of compliance with permit condition 7 of the Acid Rock Drainage Prevention and Management Conditions of Mine Permit #464, Special Management Zones delineated on the basis of NAG pH will be deemed potentially acid generating. Wharf shall provide a mitigation plan for department approval describing actions that will be taken to maintain compliance with permit condition 7.
12. The department reserves the right to alter this plan if it does not prove effective in meeting the permit conditions of Wharf's Mine Permits or if field conditions, additional geochemical data, or environmental monitoring data indicate a change is warranted.
13. Wharf may submit proposed modifications to this plan based on additional geochemical and geological data developed in consultation with the department as mining progresses through the lower unit of the Deadwood Formation.

We appreciate Wharf's cooperation in this matter. Please feel free to contact our office should you have any questions regarding this correspondence.

Sincerely,



Mark R. Nelson, CPG
Senior Hydrologist
Minerals and Mining Program

cc: S. Michals, SD GF&P

Table D-1A. Acid Base Accounting for Icebox Shale (Historical Data)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
FX3404	49966	160	170	WASTE	YES	Icebox Shale	0	13	13	13	7.5	0.07	0.07	—	—
FX3362	50345	190	200	WASTE	YES	Icebox Shale	0	17	17	17	0	0.01	—	—	—
FX3367	50674	230	240	ORE	NO	Icebox Shale	3	8	2.7	5	7.7	0.1	—	0.01	0.07
FX3398	50770	130	140	WASTE	YES	Icebox Shale	0	11	11	10	6.9	—	—	—	—
FX3410	52417	160	170	WASTE	YES	Icebox Shale	13	7	0.5	−6	6.5	0.45	0.03	0.03	0.36
FX3830	66232	160	170	WASTE	YES	Icebox Shale	—	31	0	31	8.1	0.02	—	0.01	—
FX3834	66487	160	170	WASTE	YES	Icebox Shale	—	18	0	18	7.5	0.01	—	0.01	—
FX3835	66550	190	200	WASTE	YES	Icebox Shale	18	11	0	−7	7.8	0.61	0.05	0.01	0.52
FX3836	66611	200	210	WASTE	YES	Icebox Shale	—	7	0	7	7.5	—	—	—	—
FX3837	66667	160	170	WASTE	YES	Icebox Shale	—	10	0	10	7.4	0.01	—	—	—
FX3839	66781	200	210	WASTE	YES	Icebox Shale	—	8	0	8	7.3	0.03	0.02	—	0.01
FX3840	66821	200	210	WASTE	YES	Icebox Shale	—	9	0	9	7.5	0.01	—	0.01	—
FX3841	66872	210	220	WASTE	YES	Icebox Shale	6	10	0	5	7.6	0.18	—	0.01	0.16
FX3842	66936	200	210	WASTE	YES	Icebox Shale	—	10	10	10	7.8	—	—	—	—
FX3843	66986	200	210	WASTE	YES	Icebox Shale	—	8	8	7	7.5	—	—	—	—
FX3844	67050	190	200	WASTE	YES	Icebox Shale	—	14	0	14	7.8	—	—	—	—
FX3852	67331	0	10	WASTE	YES	Icebox Shale	1	157	157	156	8.1	0.04	—	—	0.03
FX3883	67371	0	10	ORE	YES	Icebox Shale	—	211	211	211	8.7	0.02	—	0.01	0.01
FX3860	67737	110	120	ORE	YES	Icebox Shale	10	2	0.2	−8	6.7	0.38	0.06	—	0.28
FX3881	68049	30	40	WASTE	YES	Icebox Shale	—	3	0	2	6.9	0.04	0.01	—	—
FX4249	80969	30	40	WASTE	YES	Icebox Shale	1	6	6	5	0	0.04	—	—	0.01
FX4250	81029	30	40	WASTE	YES	Icebox Shale	—	8	8	7	0	0.03	—	—	—
FX4251	81089	30	40	WASTE	YES	Icebox Shale	—	14	14	13	0	0.03	—	—	—

Table D-1B. Acid Base Accounting for Icebox Shale (Current Data) (Page 1 of 2)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4749	28242	160	170	WASTE	FALSE	Icebox Shale	9.4	0.5	<0.1	-8.9	6.98	0.55	0.25	0.3	0.002
W21R-4749	28245	170	180	WASTE	FALSE	Icebox Shale	1.3	0.5	0.4	-0.8	7.03	0.32	0.28	0.04	0.001
W21R-4750	28334	170	180	WASTE	FALSE	Icebox Shale	<0.6	1.5	#N/A	1.5	7.47	<0.02	0.01	<0.02	—
W21R-4750	28335	180	190	WASTE	FALSE	Icebox Shale	<0.6	1.2	#N/A	1.2	7.42	<0.02	0.01	<0.02	—
W21R-4754	28598	30	40	WASTE	FALSE	Icebox Shale	<0.6	0.5	#N/A	0.5	6.65	0.02	0.02	<0.02	—
W21R-4754	28602	70	80	WASTE	FALSE	Icebox Shale	3.1	0.8	0.3	-2.3	7.39	0.26	0.16	0.1	—
W21R-4759	28947	100	110	WASTE	FALSE	Icebox Shale	<0.6	16.1	#N/A	16.1	8.17	<0.02	0.07	<0.02	—
W21R-4765	29429	70	80	WASTE	TRUE	Icebox Shale	<0.6	14.6	#N/A	14.6	7.53	<0.02	<0.01	<0.02	—
W21R-4775	30246	160	170	WASTE	TRUE	Icebox Shale	2.8	1.8	0.6	-1	7.78	0.19	0.1	0.09	—
W21R-4776	30334	100	110	WASTE	FALSE	Icebox Shale	<0.6	12.9	#N/A	12.9	7.72	<0.02	0.02	<0.02	—
W21R-4777	30429	110	120	WASTE	FALSE	Icebox Shale	<0.6	29.7	#N/A	29.7	7.99	0.04	0.06	<0.02	—
W21R-4779	30600	190	200	WASTE	FALSE	Icebox Shale	<0.6	1.3	#N/A	1.3	8.31	0.06	0.05	<0.02	—
W21R-4779	30601	200	210	WASTE	FALSE	Icebox Shale	<0.6	1.8	#N/A	1.8	8.41	0.03	0.02	<0.02	—
W21R-4791	31502	130	140	WASTE	FALSE	Icebox Shale	<0.6	1.5	#N/A	1.5	7.58	0.06	0.05	<0.02	—
W21R-4792	31555	60	70	WASTE	FALSE	Icebox Shale	10.6	13.4	1.3	2.80	7.29	0.37	0.03	0.34	—
W21R-4793	31862	80	90	WASTE	TRUE	Icebox Shale	24.4	5.90	0.2	-18.5	7.39	0.79	0.01	0.78	—
W21R-4795	31702	20	30	WASTE	FALSE	Icebox Shale	<0.6	13.0	#N/A	13.0	8.14	0.03	0.02	<0.02	—
W21R-4796	32191	40	50	WASTE	FALSE	Icebox Shale	0.6	2.80	4.7	2.20	7.38	0.03	0.01	0.02	—
W21R-4816	33631	30	40	WASTE	FALSE	Icebox Shale	<0.6	1.7	#N/A	1.7	6.55	0.03	0.02	<0.02	—
W21R-4817	33825	90	100	WASTE	FALSE	Icebox Shale	<0.6	89.6	#N/A	89.6	8.16	<0.02	0.02	<0.02	—
W21R-4824	34243	160	170	WASTE	FALSE	Icebox Shale	<0.6	5.1	#N/A	5.1	8.15	<0.02	0.01	<0.02	0.0021
W21R-4873	37296	150	160	WASTE	TRUE	Icebox Shale	4.7	5.6	1.2	0.9	7.55	0.18	0.03	0.15	0.00005
W21R-4877	37503	130	140	WASTE	TRUE	Icebox Shale	1.3	0.2	0.2	-1.1	8.06	0.07	0.03	0.04	0.0011
W21R-4882	37757	90	100	WASTE	TRUE	Icebox Shale	1.9	0.5	0.3	-1.4	7.41	0.10	0.04	0.06	0.0072
W21R-4883	37793	90	100	WASTE	FALSE	Icebox Shale	<0.6	2.2	#N/A	2.2	7.51	0.03	0.02	<0.02	0.0002
W21R-4891	38292	200	210	WASTE	FALSE	Icebox Shale	<0.6	5.4	#N/A	5.4	7.67	<0.02	0.01	<0.02	0.00005
W21R-4891	38296	240	250	WASTE	FALSE	Icebox Shale	1.9	29.9	15.7	28.0	8.27	0.10	0.04	0.06	0.00005
W21R-4891	38300	280	290	WASTE	FALSE	Icebox Shale	<0.6	37.9	#N/A	37.9	8.45	0.07	0.08	<0.02	0.0021
W21R-4893	38473	180	190	WASTE	FALSE	Icebox Shale	<0.6	18.8	#N/A	18.8	7.91	<0.02	0.01	<0.02	0.0002
W21R-4894	38568	190	200	WASTE	FALSE	Icebox Shale	0.6	3.8	6.3	3.2	8.41	0.03	0.01	0.02	0.0011
W21R-4894	38568	190	200	WASTE	FALSE	Icebox Shale	0.6	3.8	6.3	3.2	8.41	0.03	0.01	0.02	0.0011
W21R-4896	38709	120	130	WASTE	FALSE	Icebox Shale	<0.6	8.3	#N/A	8.3	7.35	<0.02	0.01	<0.02	0.00005
W21R-4900	39070	170	180	WASTE	FALSE	Icebox Shale	<0.6	15.6	#N/A	15.6	7.94	<0.02	0.01	<0.02	0.001

Table D-1B. Acid Base Accounting for Icebox Shale (Current Data) (Page 2 of 2)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4903	39302	130	140	WASTE	FALSE	Icebox Shale	1.6	1.8	1.1	0.2	8.11	0.08	0.03	0.05	0.00005
W21R-4904	39334	40	50	WASTE	FALSE	Icebox Shale	<0.6	7.2	#N/A	7.2	7.81	<0.02	0.01	<0.02	0.00005
W21R-4908	39565	120	130	WASTE	FALSE	Icebox Shale	<0.6	8.7	#N/A	8.7	7.90	0.03	0.02	<0.02	0.00005
W21R-4909	39660	130	140	WASTE	FALSE	Icebox Shale	<0.6	26.7	#N/A	26.7	8.13	0.02	0.01	<0.02	0.0002
W21R-4911	39847	120	130	WASTE	FALSE	Icebox Shale	5.9	13.2	2.2	7.3	7.85	0.21	0.02	0.19	0.0003
W21R-4912	39942	130	140	WASTE	FALSE	Icebox Shale	9.4	5.5	0.6	-3.9	7.87	0.33	0.03	0.30	0
W21R-4913	39987	100	110	WASTE	FALSE	Icebox Shale	14.7	5.4	0.4	-9.3	7.76	0.48	0.01	0.47	0.0002
W21R-4914	40079	80	90	WASTE	FALSE	Icebox Shale	<0.6	8.5	#N/A	8.5	7.52	<0.02	0.01	<0.02	0.0001

Table D-2A. Acid Base Accounting for Upper Deadwood (Historical Data) (Page 1 of 11)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
1179	20258	60	70	WASTE	YES	Upper Dwd	1	19	19	18	0	0.03	0.01	0.01	0.01	0.01	0.009
1184	20380	140	150	WASTE	YES	Upper Dwd	1	290	290	289	0	0.01	0.01	0.01	0.01	0.01	0
1382	34492	160	170	WASTE	YES	Upper Dwd	1	198	198	197	0	0.01	0.01	0.01	0.01	0.01	0
1391	34845	110	120	WASTE	YES	Upper Dwd	1	463	463	462	0	0.01	0.01	0.01	0.01	0.01	0.002
1392	34881	190	200	WASTE	YES	Upper Dwd	1	384	384	383	0	0.01	0.01	0.01	0.01	0.01	0.001
1497	37775	100	110	WASTE	YES	Upper Dwd	2	101	50.5	98	0	0.07	0.01	0.01	0.01	0.01	0
1498	37817	220	230	WASTE	YES	Upper Dwd	1	368	368	367	0	0.01	0.01	0.01	0.01	0.01	0.004
FX3344	49118	120	130	ORE	YES	Upper Dwd	2	17	8.5	14	0	0.09	0.02	—	0.06	0.01	0.241
FX3345	49194	230	240	WASTE	NO	Upper Dwd	0	330	330	331	0	0.01	—	—	—	—	—
FX3399	49331	150	160	WASTE	YES	Upper Dwd	2	57	28.5	55	7.5	0.07	—	—	0.06	—	—
FX3348	49377	110	120	WASTE	NO	Upper Dwd	0	286	286	286	0	0.01	—	—	—	—	—
FX3349	49439	80	90	ORE	NO	Upper Dwd	0	175	175	175	0	0.01	—	—	—	—	0.014
FX3406	49657	160	170	WASTE	YES	Upper Dwd	7	3	0.4	−4	7.5	0.3	0.09	—	—	0.21	0.01
FX3355	49827	60	70	WASTE	NO	Upper Dwd	0	183	183	183	0	0.01	—	—	—	—	—
FX3356	49893	70	80	ORE	NO	Upper Dwd	0	189	189	189	0	0.01	—	—	—	—	0.019
FX3404	49977	270	280	WASTE	YES	Upper Dwd	18	8	0.4	−10	7.8	0.57	—	0.04	0.42	0.11	—
FX3360	50208	120	130	ORE	YES	Upper Dwd	0	12	12	13	0	0.02	—	—	—	—	0.013
FX3361	50274	130	140	ORE	NO	Upper Dwd	1	47	47	46	0	0.05	0.01	—	0.03	—	0.24
FX3397	50452	260	270	WASTE	YES	Upper Dwd	0	352	352	352	8	0.01	—	0.01	—	—	—
FX3364	50478	220	230	WASTE	NO	Upper Dwd	0	67	67	67	8.3	0.02	—	—	—	—	—
FX3367	50683	320	330	ORE	NO	Upper Dwd	10	21	2.1	11	8	0.36	0.06	0.03	0.25	0.02	0.242
FX3370	50865	190	200	ORE	YES	Upper Dwd	0	71	71	71	8	0.01	—	—	—	—	0.058
FX3370	50874	280	290	WASTE	NO	Upper Dwd	0	372	372	372	8.6	0.01	—	—	—	—	—
FX3371	50930	190	200	WASTE	YES	Upper Dwd	0	366	366	367	8.5	—	—	—	—	—	—
FX3372	50995	190	200	WASTE	YES	Upper Dwd	0	186	186	186	8.3	—	—	—	—	—	—
FX3375	51199	280	290	WASTE	NO	Upper Dwd	0	225	225	225	8.7	0.01	—	—	—	—	—
FX3378	51374	80	90	WASTE	NO	Upper Dwd	0	15	15	15	7.7	—	—	—	—	—	—
FX3383	51617	60	70	WASTE	YES	Upper Dwd	4	4	1	0	6.9	0.16	0.04	—	0.1	—	0.01
FX3384	51666	50	60	WASTE	NO	Upper Dwd	0	326	326	326	8.4	0.02	—	—	0.01	—	—
FX3385	51714	30	40	ORE	NO	Upper Dwd	0	10	10	10	8	0.02	—	—	—	—	0.012
FX3409	52376	250	260	ORE	YES	Upper Dwd	3	11	3.7	8	7.9	0.12	0.03	—	0.06	0.03	0.038
FX3409	52387	360	370	WASTE	YES	Upper Dwd	0	269	269	270	8.7	0.01	—	—	—	—	0.01
FX3410	52429	280	290	WASTE	YES	Upper Dwd	0	233	233	232	8.6	0.02	—	—	—	—	—
FX3411	52470	190	200	ORE	YES	Upper Dwd	0	47	47	48	7.8	0.01	—	—	—	—	0.012

Table D-2A. Acid Base Accounting for Upper Deadwood (Historical Data) (Page 2 of 11)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3412	52526	250	260	WASTE	YES	Upper Dwd	0	273	273	274	8.4	0.04	0.01	—	0.02	—	—
FX3412	52534	330	340	WASTE	NO	Upper Dwd	0	288	288	288	8.6	—	—	—	—	—	—
FX3413	52576	250	260	WASTE	NO	Upper Dwd	0	372	372	372	8.6	0.01	—	—	—	—	—
FX3414	52621	200	210	ORE	YES	Upper Dwd	0	204	204	204	8	—	—	—	—	—	0.011
FX3416	52724	230	240	WASTE	NO	Upper Dwd	0	355	355	355	8.5	0.01	—	—	—	—	—
FX3417	52773	220	230	WASTE	NO	Upper Dwd	0	40	40	41	7.8	0.02	—	—	—	—	—
FX3420	52921	200	210	ORE	YES	Upper Dwd	3	15	5	12	8	0.1	0.01	0.01	0.07	—	0.099
2169	53820	130	140	ORE	YES	Upper Dwd	1	243	243	242	0	0.01	0.01	0.01	0.01	0.01	0.013
1846	62811	290	300	WASTE	YES	Upper Dwd	1	211	211	210	0	0.01	0.01	0.01	0.01	0.01	0
1958	63008	230	240	WASTE	YES	Upper Dwd	1	429	429	428	0	0.01	0.01	0.01	0.01	0.01	0.001
1959	63044	270	280	WASTE	YES	Upper Dwd	1	241	241	240	0	0.01	0.01	0.01	0.01	0.01	0.001
1963	63141	190	200	WASTE	YES	Upper Dwd	1	238	238	237	0	0.01	0.01	0.01	0.01	0.01	0.004
1967	63242	270	280	WASTE	YES	Upper Dwd	1	362	362	361	0	0.01	0.01	0.01	0.01	0.01	0.005
FX3830	66236	200	210	WASTE	YES	Upper Dwd	—	166	0	165	8.8	0.01	—	0.01	—	—	—
FX3830	66240	240	250	ORE	YES	Upper Dwd	7	20	0	13	8.2	0.33	0.1	—	0.18	0.05	0.087
FX3830	66241	250	260	ORE	YES	Upper Dwd	—	235	0	234	8.5	0.03	—	—	0.02	—	0.021
FX3830	66244	280	290	WASTE	YES	Upper Dwd	—	254	0	253	8.7	0.02	—	0.01	—	—	0.01
FX3831	66301	200	210	ORE	YES	Upper Dwd	—	237	0	237	8.9	0.01	—	0.01	—	—	0.028
FX3831	66305	240	250	WASTE	YES	Upper Dwd	—	207	0	207	8.6	—	—	—	—	—	—
FX3831	66309	280	290	WASTE	YES	Upper Dwd	—	367	0	366	8.9	0.02	—	0.02	—	—	—
FX3832	66361	200	210	WASTE	YES	Upper Dwd	1	49	0	47	8.6	0.05	0.02	—	0.03	—	—
FX3832	66366	250	260	ORE	YES	Upper Dwd	—	163	0	163	8.2	—	—	—	—	—	0.016
FX3832	66370	290	300	WASTE	YES	Upper Dwd	—	276	0	276	8.4	—	—	—	—	—	—
FX3834	66490	190	200	WASTE	YES	Upper Dwd	2	4	2	2	6.9	0.07	0.01	—	0.02	0.04	—
FX3834	66493	220	230	ORE	YES	Upper Dwd	2	40	20	38	8.4	0.12	0.05	—	0.05	0.02	0.032
FX3834	66495	240	250	ORE	YES	Upper Dwd	1	260	0	258	8.7	0.05	—	—	0.03	—	0.03
FX3834	66499	280	290	WASTE	YES	Upper Dwd	—	82	0	81	8.5	0.02	—	—	0.01	—	—
FX3834	66503	320	330	WASTE	YES	Upper Dwd	1	80	0	79	8.3	0.04	—	—	0.03	—	—
FX3835	66558	270	280	ORE	YES	Upper Dwd	—	78	0	77	8.9	0.02	—	—	0.01	—	0.068
FX3835	66562	310	320	WASTE	YES	Upper Dwd	—	125	0	124	8.6	0.01	—	—	—	—	—
FX3835	66566	350	360	WASTE	YES	Upper Dwd	—	289	0	289	8.8	0.01	—	—	—	—	—
FX3836	66620	290	300	WASTE	YES	Upper Dwd	—	268	0	267	8.3	—	—	—	—	—	—
FX3836	66624	330	340	WASTE	YES	Upper Dwd	—	339	0	339	8.3	0.01	—	—	—	—	—
FX3837	66675	240	250	ORE	YES	Upper Dwd	—	63	0	62	8.4	0.03	—	—	—	0.02	0.014



Table D-2A. Acid Base Accounting for Upper Deadwood (Historical Data) (Page 3 of 11)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3837	66679	280	290	WASTE	YES	Upper Dwd	—	207	0	206	8.3	0.02	—	0.01	—	—	—
FX3837	66683	320	330	WASTE	YES	Upper Dwd	—	292	0	292	8.4	0.01	—	0.01	—	—	—
FX3838	66740	290	300	WASTE	YES	Upper Dwd	—	232	0	232	8.3	—	—	—	—	—	—
FX3838	66744	330	340	WASTE	YES	Upper Dwd	—	403	0	403	8.7	0.01	—	—	—	—	—
FX3839	66785	240	250	WASTE	YES	Upper Dwd	—	146	0	146	8.5	—	—	—	—	—	—
FX3839	66789	280	290	ORE	YES	Upper Dwd	—	163	0	163	8.5	—	—	—	—	—	0.013
FX3839	66793	320	330	WASTE	YES	Upper Dwd	—	361	0	361	8.3	0.01	—	—	—	—	—
FX3840	66825	240	250	WASTE	YES	Upper Dwd	6	10	0	4	8.6	0.26	0.06	—	0.05	0.14	—
FX3840	66833	320	330	WASTE	YES	Upper Dwd	—	248	0	248	8.3	0.01	—	—	—	—	—
FX3840	66837	360	370	WASTE	YES	Upper Dwd	—	370	0	369	8.7	0.01	—	0.01	—	—	—
FX3841	66876	250	260	ORE	YES	Upper Dwd	2	9	0	7	8.5	0.08	0.01	0.01	0.03	0.03	0.019
FX3842	66940	240	250	WASTE	YES	Upper Dwd	1	6	6	5	8.1	0.06	0.02	—	0.04	—	—
FX3842	66948	320	330	WASTE	YES	Upper Dwd	—	215	215	214	8.4	—	—	—	—	—	—
FX3842	66952	360	370	WASTE	YES	Upper Dwd	—	362	362	362	8.7	—	—	—	—	—	—
FX3843	66990	240	250	WASTE	YES	Upper Dwd	—	91	91	91	8	0.02	0.01	—	0.01	—	—
FX3843	66994	280	290	ORE	YES	Upper Dwd	3	26	8.7	23	8.2	0.1	—	—	0.09	—	0.14
FX3853	67008	80	90	WASTE	YES	Upper Dwd	2	317	158.5	315	8.4	0.06	—	0.02	0.03	0.02	—
FX3844	67054	230	240	ORE	YES	Upper Dwd	—	17	0	16	8.4	0.04	—	—	0.03	—	0.022
FX3844	67058	270	280	ORE	YES	Upper Dwd	—	312	0	311	8.9	0.01	—	—	0.01	—	0.013
FX3845	67114	230	240	WASTE	YES	Upper Dwd	—	113	0	113	8.6	0.01	—	—	—	—	—
FX3845	67118	270	280	ORE	YES	Upper Dwd	4	68	0	64	8.2	0.14	0.02	—	0.1	0.01	0.057
FX3846	67165	240	250	ORE	YES	Upper Dwd	5	86	0	81	8.4	0.18	0.02	0.02	0.13	0.01	0.125
FX3846	67169	280	290	WASTE	YES	Upper Dwd	—	196	0	196	8.3	0.01	—	0.01	—	—	—
FX3846	67172	310	320	ORE	YES	Upper Dwd	—	265	0	264	8.9	0.01	—	0.01	—	—	0.088
FX3850	67316	150	160	ORE	YES	Upper Dwd	—	146	146	145	8.1	0.03	—	—	0.03	—	0.011
FX3852	67333	20	30	WASTE	YES	Upper Dwd	4	22	5.5	18	7.8	0.16	0.02	—	0.06	0.08	—
FX3852	67334	30	40	WASTE	YES	Upper Dwd	6	4	0.7	2	7.4	0.24	0.05	—	0.13	0.06	—
FX3852	67338	70	80	WASTE	YES	Upper Dwd	1	10	10	9	7.7	0.04	—	—	0.03	0.01	—
FX3852	67339	80	90	ORE	YES	Upper Dwd	2	12	6	10	7.6	0.09	0.02	—	0.05	0.02	0.011
FX3852	67340	90	100	WASTE	YES	Upper Dwd	—	73	73	72	8.1	0.03	—	0.01	0.02	—	—
FX3852	67341	100	110	WASTE	YES	Upper Dwd	—	171	171	171	8.1	0.03	—	—	0.02	—	—
FX3852	67342	110	120	WASTE	YES	Upper Dwd	—	183	183	183	8.3	0.01	—	—	0.01	—	—
FX3852	67343	120	130	WASTE	YES	Upper Dwd	—	180	180	179	8.3	0.01	—	—	0.01	—	—
FX3852	67344	130	140	WASTE	YES	Upper Dwd	—	309	309	308	8.5	0.02	—	0.02	—	—	—

Table D-2A. Acid Base Accounting for Upper Deadwood (Historical Data) (Page 4 of 11)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3852	67345	140	150	WASTE	YES	Upper Dwd	1	260	260	259	8.4	0.04	—	0.01	0.03	—	—
FX3852	67346	150	160	ORE	YES	Upper Dwd	2	243	121.5	241	8.4	0.07	0.01	0.01	0.05	—	0.018
FX3852	67347	160	170	WASTE	YES	Upper Dwd	—	206	206	205	8.5	0.02	—	—	0.02	—	—
FX3883	67377	60	70	ORE	YES	Upper Dwd	1	37	37	36	8.7	0.05	0.01	—	0.02	0.02	0.017
FX3883	67385	140	150	WASTE	YES	Upper Dwd	—	182	182	182	8.4	0.01	—	0.01	—	—	—
FX3884	67405	140	150	ORE	YES	Upper Dwd	1	148	0	147	8.4	0.04	—	—	0.03	—	0.015
FX3884	67407	160	170	WASTE	YES	Upper Dwd	—	229	0	229	8.5	0.02	—	—	0.02	—	—
FX3886	67442	110	120	WASTE	YES	Upper Dwd	—	137	137	137	8.3	0.03	0.01	—	0.02	—	—
FX3886	67443	120	130	WASTE	YES	Upper Dwd	—	200	200	200	8.4	0.01	—	—	—	—	—
FX3886	67444	130	140	WASTE	YES	Upper Dwd	—	176	0	176	8.8	—	—	—	—	—	—
FX3886	67445	140	150	WASTE	YES	Upper Dwd	—	44	0	43	8.5	0.01	—	0.01	—	—	—
FX3886	67446	150	160	WASTE	YES	Upper Dwd	7	23	3.3	17	8	0.24	0.02	0.01	0.17	0.04	—
FX3886	67447	160	170	WASTE	YES	Upper Dwd	3	65	21.7	62	8.2	0.13	0.02	—	0.09	0.02	—
FX3885	67476	50	60	ORE	YES	Upper Dwd	—	383	0	383	8.5	0.02	—	—	0.02	—	0.588
FX3885	67479	80	90	WASTE	YES	Upper Dwd	—	201	0	201	8.3	0.02	—	—	0.02	—	—
FX3885	67480	90	100	WASTE	YES	Upper Dwd	—	215	0	215	8.2	0.04	0.02	—	0.02	—	—
FX3885	67481	100	110	WASTE	YES	Upper Dwd	—	269	0	268	8.3	0.01	—	0.01	—	—	—
FX3885	67482	110	120	WASTE	YES	Upper Dwd	—	243	0	243	8.2	0.01	—	—	—	—	—
FX3885	67483	120	130	WASTE	YES	Upper Dwd	—	319	0	319	8.3	—	—	—	—	—	—
FX3885	67484	130	140	WASTE	YES	Upper Dwd	—	266	0	266	8.5	0.01	—	—	—	—	—
FX3885	67485	140	150	WASTE	YES	Upper Dwd	—	224	0	223	8.7	0.02	—	0.02	—	—	—
FX3885	67486	150	160	WASTE	YES	Upper Dwd	—	168	0	167	8.5	0.01	—	0.01	—	—	—
FX3867	67497	60	70	WASTE	YES	Upper Dwd	5	5	0	0	7.6	0.2	0.02	—	—	0.17	—
FX3867	67498	70	80	ORE	YES	Upper Dwd	8	5	0	−3	7.6	0.26	0.02	—	0.04	0.21	0.038
FX3867	67501	100	110	WASTE	YES	Upper Dwd	18	4	0	−14	7.3	0.64	0.05	—	0.26	0.33	0.005
FX3867	67502	110	120	ORE	YES	Upper Dwd	17	6	0	−10	7.3	0.59	0.06	—	0.14	0.39	0.033
FX3867	67503	120	130	ORE	YES	Upper Dwd	23	6	0	−18	7.3	0.83	0.08	—	0.26	0.49	0.039
FX3867	67504	130	140	WASTE	YES	Upper Dwd	2	7	0	5	7.8	0.07	—	—	0.04	0.03	—
FX3867	67505	140	150	WASTE	YES	Upper Dwd	—	9	0	9	7.7	0.02	—	—	—	0.01	—
FX3867	67506	150	160	WASTE	YES	Upper Dwd	—	49	0	49	7.9	0.01	—	0.01	—	—	—
FX3867	67507	160	170	WASTE	YES	Upper Dwd	—	120	0	119	8.1	0.01	—	0.01	—	—	—
FX3867	67508	170	180	ORE	YES	Upper Dwd	3	40	0	37	8.3	0.11	—	—	0.05	0.05	0.034
FX3867	67509	180	190	ORE	YES	Upper Dwd	—	12	0	12	8.1	0.03	—	—	—	0.01	0.076
FX3869	67555	70	80	WASTE	YES	Upper Dwd	3	8	4.5	5	0	0.12	0.04	—	0.09	—	—

Table D-2A. Acid Base Accounting for Upper Deadwood (Historical Data) (Page 5 of 11)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3869	67556	80	90	WASTE	YES	Upper Dwd	—	9	8	8	0	0.03	0.01	—	0.02	—	—
FX3869	67557	90	100	WASTE	YES	Upper Dwd	—	7	10	6	0	0.04	0.01	—	0.02	—	—
FX3869	67558	100	110	WASTE	YES	Upper Dwd	—	24	26	24	0	0.02	—	—	0.02	—	—
FX3869	67559	110	120	WASTE	YES	Upper Dwd	—	167	191	167	0	0.01	—	—	—	—	—
FX3869	67560	120	130	WASTE	YES	Upper Dwd	—	289	289	288	0	0.02	—	0.01	—	—	—
FX3865	67571	100	110	WASTE	YES	Upper Dwd	21	22	0	0	7.2	1	0.37	—	0.17	0.51	—
FX3865	67572	110	120	ORE	YES	Upper Dwd	17	2	0	-14	7.4	0.8	0.26	—	0.15	0.38	0.011
FX3865	67573	120	130	WASTE	YES	Upper Dwd	2	5	0	3	7.6	0.1	0.05	—	0.03	0.02	—
FX3865	67574	130	140	WASTE	YES	Upper Dwd	6	5	0	-1	7.4	0.3	0.12	—	0.14	0.05	—
FX3865	67575	140	150	WASTE	YES	Upper Dwd	1	9	0	7	7.7	0.08	0.03	—	0.04	—	—
FX3865	67576	150	160	WASTE	YES	Upper Dwd	—	10	0	9	7.5	0.05	0.02	—	0.03	—	—
FX3865	67577	160	170	ORE	YES	Upper Dwd	29	8	0	-21	7.5	1.2	0.24	0.06	0.61	0.27	0.012
FX3865	67578	170	180	WASTE	YES	Upper Dwd	3	11	0	8	7.9	0.15	0.05	—	0.07	0.03	0.009
FX3866	67596	100	110	WASTE	YES	Upper Dwd	35	2	0	-33	7.1	1.4	0.29	—	0.03	1.1	—
FX3866	67597	110	120	WASTE	YES	Upper Dwd	29	2	0	-26	7.2	1.2	0.26	—	—	0.91	—
FX3866	67598	120	130	WASTE	YES	Upper Dwd	16	3	0	-13	7.1	0.66	0.14	—	0.16	0.36	—
FX3866	67599	130	140	WASTE	YES	Upper Dwd	5	2	0	-3	7.1	0.17	0.02	—	0.05	0.1	—
FX3866	67600	140	150	WASTE	YES	Upper Dwd	4	3	0	0	7.3	0.16	0.05	—	—	0.11	—
FX3866	67601	150	160	WASTE	YES	Upper Dwd	16	2	0	-15	7.3	0.68	0.16	—	0.17	0.35	—
FX3858	67684	130	140	WASTE	YES	Upper Dwd	3	5	1.7	2	7.1	0.15	0.04	—	0.01	0.09	—
FX3858	67685	140	150	WASTE	YES	Upper Dwd	4	7	1.8	3	6.7	0.14	0.02	—	0.09	0.03	—
FX3858	67686	150	160	WASTE	YES	Upper Dwd	—	8	8	8	7.1	0.02	0.01	—	0.01	—	—
FX3858	67687	160	170	WASTE	YES	Upper Dwd	—	9	9	9	7.4	0.02	—	—	0.01	—	—
FX3858	67688	170	180	WASTE	YES	Upper Dwd	—	15	15	14	8	0.02	—	—	0.01	—	—
FX3858	67689	180	190	WASTE	YES	Upper Dwd	—	14	14	14	7.7	—	—	—	—	—	—
FX3859	67701	50	60	WASTE	YES	Upper Dwd	3	5	0	2	7.6	0.1	0.01	—	0.02	0.07	—
FX3859	67702	60	70	WASTE	YES	Upper Dwd	1	4	0	3	8.2	0.07	0.03	—	0.02	0.02	—
FX3859	67705	90	100	ORE	NO	Upper Dwd	18	3	0	-15	7.5	0.62	0.04	0.02	0.55	—	0.013
FX3859	67706	100	110	WASTE	NO	Upper Dwd	20	2	0	-18	7.4	0.78	0.14	0.58	0.04	0.03	—
FX3859	67707	110	120	WASTE	NO	Upper Dwd	15	2	0	-12	7.5	0.53	0.06	0.02	0.42	0.02	—
FX3859	67708	120	130	WASTE	NO	Upper Dwd	11	4	0	-7	7.6	0.4	0.06	—	0.34	—	—
FX3859	67709	130	140	WASTE	NO	Upper Dwd	—	6	0	5	7.8	0.04	—	—	0.03	—	—
FX3859	67710	140	150	WASTE	NO	Upper Dwd	—	8	0	7	8.1	0.02	—	—	0.02	—	—
FX3860	67738	120	130	WASTE	YES	Upper Dwd	9	2	0.2	-7	6.9	0.38	0.09	—	0.11	0.18	—

Table D-2A. Acid Base Accounting for Upper Deadwood (Historical Data) (Page 6 of 11)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3860	67739	130	140	WASTE	YES	Upper Dwd	3	3	1	1	7	0.12	0.02	—	0.07	0.02	—
FX3860	67740	140	150	WASTE	YES	Upper Dwd	2	2	1	0	6.7	0.1	0.02	—	0.05	0.02	—
FX3860	67741	150	160	WASTE	YES	Upper Dwd	—	9	9	8	7.2	0.04	—	—	0.03	—	—
FX3860	67742	160	170	WASTE	YES	Upper Dwd	—	10	10	9	7.4	0.04	—	—	0.02	0.01	—
FX3860	67743	170	180	WASTE	YES	Upper Dwd	—	10	10	9	7.6	0.04	0.01	—	0.02	—	—
FX3860	67744	180	190	WASTE	YES	Upper Dwd	1	6	6	5	6.9	0.05	0.01	—	0.03	0.01	—
FX3860	67745	190	200	ORE	YES	Upper Dwd	2	13	6.5	11	8	0.07	—	—	0.06	—	0.031
FX3861	67763	120	130	WASTE	YES	Upper Dwd	2	2	1	0	7.3	0.07	0.01	0.01	0.03	0.02	—
FX3861	67764	130	140	WASTE	YES	Upper Dwd	2	3	1.5	1	7.1	0.09	0.02	—	0.06	0.01	—
FX3861	67765	140	150	WASTE	YES	Upper Dwd	—	3	3	2	7.3	0.02	—	—	0.02	—	—
FX3861	67766	150	160	WASTE	YES	Upper Dwd	—	2	2	2	7.1	0.02	—	—	—	—	—
FX3861	67767	160	170	WASTE	YES	Upper Dwd	—	8	8	8	6.9	0.02	—	—	—	—	—
FX3861	67768	170	180	WASTE	YES	Upper Dwd	—	6	6	5	6.6	0.02	—	—	0.01	—	—
FX3861	67769	180	190	WASTE	YES	Upper Dwd	6	15	2.5	9	7.3	0.22	0.03	—	0.09	0.1	0.01
FX3862	67782	60	70	WASTE	YES	Upper Dwd	3	3	1	1	7.7	0.1	0.01	0.02	0.03	0.04	—
FX3862	67785	90	100	WASTE	YES	Upper Dwd	4	4	1	0	7.4	0.18	0.04	—	0.03	0.11	—
FX3862	67786	100	110	WASTE	YES	Upper Dwd	—	13	13	13	7.5	0.02	—	—	0.01	—	—
FX3862	67787	110	120	WASTE	YES	Upper Dwd	—	14	14	14	7.7	0.02	—	—	—	—	—
FX3862	67788	120	130	WASTE	YES	Upper Dwd	—	11	11	11	7.7	0.02	—	0.01	—	—	—
FX3862	67789	130	140	WASTE	YES	Upper Dwd	—	13	13	13	7.8	0.02	—	—	—	—	—
FX3862	67790	140	150	WASTE	YES	Upper Dwd	—	14	14	14	7.7	0.02	—	—	—	—	—
FX3862	67791	150	160	WASTE	YES	Upper Dwd	—	13	13	13	7.7	0.01	—	—	—	—	—
FX3864	67822	60	70	WASTE	YES	Upper Dwd	5	3	0	−2	7.9	0.22	0.08	—	—	0.14	—
FX3864	67823	70	80	WASTE	YES	Upper Dwd	8	2	0	−6	7.5	0.36	0.1	—	—	0.26	—
FX3864	67824	80	90	WASTE	YES	Upper Dwd	29	1	0	−28	7.4	1	0.06	—	0.34	0.6	—
FX3874	67857	110	120	WASTE	YES	Upper Dwd	21	4	0	−16	7.7	0.71	0.04	0.01	0.52	0.14	—
FX3874	67859	130	140	WASTE	YES	Upper Dwd	3	1	0	−2	7.4	0.14	0.03	—	0.02	0.09	—
FX3874	67860	140	150	WASTE	YES	Upper Dwd	2	3	0	1	7.6	0.1	0.02	—	0.06	0.02	—
FX3874	67861	150	160	WASTE	YES	Upper Dwd	3	9	0	6	7.6	0.1	0.01	—	0.07	0.02	—
FX3874	67862	160	170	WASTE	YES	Upper Dwd	—	9	0	8	7.6	0.01	—	—	—	—	—
FX3874	67863	170	180	WASTE	YES	Upper Dwd	—	7	0	7	7.4	0.01	—	—	—	—	—
FX3874	67864	180	190	WASTE	YES	Upper Dwd	4	6	0	2	7.3	0.16	0.02	—	0.12	0.02	—
FX3874	67865	190	200	ORE	YES	Upper Dwd	12	7	0	−5	7.7	0.44	0.06	—	0.35	0.03	0.011
FX3874	67866	200	210	WASTE	YES	Upper Dwd	5	11	0	6	7.7	0.21	0.04	—	0.17	—	—

Table D-2A. Acid Base Accounting for Upper Deadwood (Historical Data) (Page 7 of 11)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3875	67884	130	140	WASTE	YES	Upper Dwd	19	2	0	-17	7.2	0.66	0.04	—	0.14	0.48	—
FX3875	67885	140	150	WASTE	YES	Upper Dwd	7	2	0	-4	7.1	0.28	0.07	—	0.06	0.15	—
FX3876	67891	50	60	WASTE	YES	Upper Dwd	6	2	0	-4	7.4	0.24	0.06	—	0.01	0.17	—
FX3876	67894	80	90	ORE	YES	Upper Dwd	31	2	0	-29	6.9	1.1	0.15	—	0.62	0.37	0.154
FX3876	67895	90	100	ORE	YES	Upper Dwd	5	3	0	-2	7.1	0.23	0.06	—	0.08	0.09	0.012
FX3877	67909	130	140	WASTE	YES	Upper Dwd	18	2	0	-17	7.3	0.67	0.08	0.02	0.4	0.17	—
FX3877	67910	140	150	WASTE	YES	Upper Dwd	14	2	0	-11	7.7	0.55	0.11	—	0.15	0.29	—
FX3877	67911	150	160	WASTE	YES	Upper Dwd	21	2	0	-20	7.4	0.76	0.08	—	0.08	0.6	—
FX3877	67912	160	170	WASTE	YES	Upper Dwd	3	2	0	-1	7.4	0.14	0.04	—	0.06	0.04	—
FX3877	67913	170	180	WASTE	YES	Upper Dwd	8	2	0	-6	7.3	0.38	0.13	—	0.18	0.07	—
FX3877	67914	180	190	WASTE	YES	Upper Dwd	1	8	0	7	7.7	0.06	0.02	—	0.04	—	—
FX3877	67915	190	200	WASTE	YES	Upper Dwd	3	11	0	8	8.1	0.12	0.01	0.01	0.09	0.01	—
FX3877	67916	200	210	ORE	YES	Upper Dwd	52	5	0	-47	7.1	1.9	0.26	0.01	1.1	0.56	0.033
FX3878	67931	50	60	WASTE	YES	Upper Dwd	2	5	2.5	3	8.1	0.1	0.04	—	—	0.06	—
FX3878	67932	60	70	WASTE	YES	Upper Dwd	2	6	0	5	7.9	0.08	0.03	—	—	0.05	—
FX3878	67935	90	100	WASTE	YES	Upper Dwd	2	11	0	9	8	0.09	—	—	0.04	0.04	—
FX3878	67936	100	110	WASTE	YES	Upper Dwd	—	9	0	9	8	0.02	—	—	—	—	—
FX3878	67937	110	120	WASTE	YES	Upper Dwd	—	11	0	10	7.9	0.02	—	—	—	—	—
FX3878	67938	120	130	WASTE	YES	Upper Dwd	—	99	0	99	7.8	0.08	0.07	—	—	—	—
FX3878	67939	130	140	WASTE	YES	Upper Dwd	—	167	0	167	8.1	0.01	—	0.01	—	—	—
FX3878	67940	140	150	WASTE	YES	Upper Dwd	—	258	0	258	8.4	0.01	—	0.01	—	—	—
FX3879	67945	40	50	WASTE	YES	Upper Dwd	3	3	0	0	7.9	0.14	0.04	—	0.02	0.08	—
FX3879	67946	50	60	ORE	YES	Upper Dwd	11	6	0	-5	7.7	0.4	0.06	—	0.07	0.27	0.069
FX3879	67947	60	70	ORE	YES	Upper Dwd	10	7	0	-3	7.7	0.37	0.04	—	0.08	0.24	0.031
FX3879	67948	70	80	ORE	YES	Upper Dwd	8	3	0	-5	7.7	0.31	0.04	0.01	0.16	0.1	0.104
FX3879	67949	80	90	ORE	YES	Upper Dwd	16	4	0	-12	7.4	0.58	0.08	0.02	0.24	0.25	0.058
FX3879	67950	90	100	ORE	YES	Upper Dwd	41	4	0	-37	7.3	1.5	0.19	0.04	0.17	1.1	0.019
FX3879	67951	100	110	ORE	YES	Upper Dwd	27	3	0	-24	7.5	1	0.18	0.01	0.18	0.66	0.012
FX3879	67952	110	120	ORE	NO	Upper Dwd	21	5	0	-16	7.5	0.76	0.1	0.02	0.27	0.37	0.07
FX3879	67953	120	130	ORE	NO	Upper Dwd	4	2	0	-2	7.9	0.18	0.05	—	0.13	—	0.02
FX3879	67954	130	140	ORE	NO	Upper Dwd	1	4	0	3	8.2	0.05	—	—	0.04	—	0.016
FX3879	67955	140	150	WASTE	NO	Upper Dwd	—	131	0	130	8.4	0.02	—	—	0.01	—	—
FX3873	68010	90	100	WASTE	YES	Upper Dwd	2	1	0	0	7.5	0.06	0.01	—	0.05	—	0.01
FX3873	68011	100	110	WASTE	YES	Upper Dwd	5	2	0	-3	7.3	0.16	0.01	—	0.16	—	—

Table D-2A. Acid Base Accounting for Upper Deadwood (Historical Data) (Page 8 of 11)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3873	68013	120	130	ORE	YES	Upper Dwd	3	3	0	0	7	0.1	0.01	—	0.06	0.04	0.011
FX3873	68014	130	140	WASTE	YES	Upper Dwd	12	4	0	-8	7	0.44	0.06	—	0.25	0.13	—
FX3873	68015	140	150	WASTE	YES	Upper Dwd	22	3	0	-18	7	0.78	0.08	—	0.53	0.16	—
FX3873	68016	150	160	WASTE	YES	Upper Dwd	2	8	0	6	7.1	0.06	0.01	—	0.04	0.01	—
FX3873	68017	160	170	WASTE	YES	Upper Dwd	—	12	0	11	7.2	0.02	—	—	0.01	—	—
FX3873	68018	170	180	WASTE	YES	Upper Dwd	—	8	0	8	7.4	0.02	—	—	0.01	—	—
FX3873	68019	180	190	WASTE	YES	Upper Dwd	—	12	0	12	7.4	0.02	—	—	—	—	—
FX3873	68020	190	200	WASTE	YES	Upper Dwd	—	12	0	12	7.7	0.02	—	—	0.01	—	—
FX3880	68032	110	120	WASTE	YES	Upper Dwd	10	4	0	-6	7.5	0.32	0.01	—	0.11	0.2	—
FX3880	68033	120	130	WASTE	YES	Upper Dwd	12	4	0	-8	7.6	0.42	0.02	0.02	0.23	0.15	—
FX3880	68034	130	140	WASTE	YES	Upper Dwd	10	3	0	-6	7.4	0.32	0.01	—	0.15	0.16	—
FX3880	68035	140	150	ORE	YES	Upper Dwd	8	3	0	-5	7.3	0.26	—	0.03	0.19	0.04	0.013
FX3880	68036	150	160	ORE	YES	Upper Dwd	2	6	0	4	7.6	0.06	—	0.01	0.05	—	0.015
FX3880	68037	160	170	WASTE	YES	Upper Dwd	—	12	0	11	7.4	0.02	—	0.01	—	—	—
FX3881	68050	40	50	WASTE	YES	Upper Dwd	2	2	0	0	7.7	0.11	0.03	—	0.02	0.06	—
FX3881	68051	50	60	WASTE	YES	Upper Dwd	3	7	0	4	8.1	0.12	0.02	—	0.04	0.06	—
FX3881	68052	60	70	WASTE	YES	Upper Dwd	4	7	0	4	7.9	0.12	—	—	0.08	0.03	—
FX3881	68055	90	100	WASTE	YES	Upper Dwd	4	4	0	-1	7.3	0.16	0.02	—	0.12	0.02	—
FX3881	68056	100	110	WASTE	YES	Upper Dwd	16	4	0	-12	7.3	0.58	0.06	—	0.35	0.17	0.008
FX3881	68057	110	120	WASTE	YES	Upper Dwd	18	4	0	-14	7.2	0.66	0.08	—	0.48	0.09	—
FX3881	68058	120	130	WASTE	YES	Upper Dwd	6	8	0	2	7.9	0.23	0.03	—	0.18	0.02	—
FX3881	68059	130	140	WASTE	YES	Upper Dwd	3	13	0	11	8.2	0.1	0.02	—	0.07	0.02	—
FX3881	68060	140	150	WASTE	YES	Upper Dwd	—	13	0	13	8.5	0.02	—	—	0.01	—	—
FX3857	68289	80	90	WASTE	YES	Upper Dwd	3	7	0	4	8.3	0.1	—	—	0.03	0.07	—
FX3857	68290	90	100	WASTE	YES	Upper Dwd	1	3	0	2	7.8	0.05	0.02	—	0.02	0.02	—
FX3857	68294	130	140	ORE	YES	Upper Dwd	8	5	0	-3	7.8	0.3	0.06	—	0.09	0.16	0.016
FX3857	68295	140	150	WASTE	YES	Upper Dwd	7	8	0	1	7.7	0.3	0.07	—	0.12	0.11	—
FX3898	68310	140	150	WASTE	YES	Upper Dwd	3	4	0	0	7.8	0.13	0.02	—	0.03	0.07	—
FX3898	68311	150	160	WASTE	YES	Upper Dwd	11	5	0	-6	7.7	0.43	0.07	—	0.18	0.18	—
FX3898	68312	160	170	WASTE	YES	Upper Dwd	—	9	0	9	8	0.03	—	—	0.02	—	—
FX3898	68313	170	180	WASTE	YES	Upper Dwd	—	7	0	7	7.9	0.02	—	—	—	—	—
FX3898	68314	180	190	WASTE	YES	Upper Dwd	—	11	0	11	7.9	0.01	—	0.01	—	—	—
FX3898	68315	190	200	WASTE	YES	Upper Dwd	—	12	0	12	7.9	—	—	—	—	—	—
FX3899	68330	140	150	WASTE	YES	Upper Dwd	4	5	0	1	7.5	0.15	0.01	—	0.12	0.02	—

Table D-2A. Acid Base Accounting for Upper Deadwood (Historical Data) (Page 9 of 11)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3899	68331	150	160	WASTE	YES	Upper Dwd	7	6	0	-1	7.5	0.26	0.02	—	0.18	0.05	—
FX3899	68332	160	170	WASTE	YES	Upper Dwd	9	5	0	-3	7.4	0.31	0.03	—	0.05	0.23	—
FX3899	68333	170	180	WASTE	YES	Upper Dwd	—	5	0	5	7.4	0.02	—	—	0.01	—	—
FX3899	68334	180	190	WASTE	YES	Upper Dwd	—	7	0	6	7.6	0.02	—	—	0.02	—	—
FX3899	68335	190	200	WASTE	YES	Upper Dwd	—	11	0	10	7.4	0.01	—	—	—	—	—
FX3899	68336	200	210	WASTE	YES	Upper Dwd	1	11	0	9	7.5	0.04	—	—	0.04	—	—
FX3899	68337	210	220	WASTE	YES	Upper Dwd	10	5	0	-4	7.3	0.32	0.02	0.01	0.13	0.17	—
FX3901	68348	70	80	WASTE	YES	Upper Dwd	4	7	0	3	7.7	0.15	0.02	—	0.1	0.02	—
FX3901	68349	80	90	WASTE	YES	Upper Dwd	2	5	0	2	7.8	0.1	0.02	—	0.06	0.02	—
FX3901	68354	130	140	WASTE	NO	Upper Dwd	17	8	0	-9	7.6	0.67	0.13	—	0.2	0.34	—
FX3901	68355	140	150	WASTE	NO	Upper Dwd	—	15	0	14	7.9	0.04	0.02	—	0.02	—	—
FX3902	68368	120	130	ORE	YES	Upper Dwd	22	4	0	-19	7.4	0.86	0.15	0.08	0.05	0.58	0.014
FX3902	68369	130	140	WASTE	YES	Upper Dwd	—	13	0	12	7.7	0.03	—	—	0.02	—	—
FX3902	68370	140	150	WASTE	YES	Upper Dwd	—	12	0	12	7.9	0.02	—	0.01	—	—	—
FX3902	68371	150	160	WASTE	YES	Upper Dwd	—	8	0	8	8	—	—	—	—	—	—
FX3902	68372	160	170	WASTE	YES	Upper Dwd	—	15	0	15	8.3	—	—	—	—	—	—
FX3902	68373	170	180	WASTE	YES	Upper Dwd	—	6	0	6	8	0.01	—	—	—	—	—
FX3902	68374	180	190	ORE	YES	Upper Dwd	—	15	0	14	8.3	0.02	—	0.02	—	—	0.059
2218	68502	240	250	WASTE	YES	Upper Dwd	1	172	172	171	0	0.01	0.01	0.01	0.01	0.01	0.004
2220	68553	180	190	ORE	YES	Upper Dwd	1	145	145	144	0	0.01	0.01	0.01	0.01	0.01	0.011
2222	68612	200	210	ORE	YES	Upper Dwd	10	11	1.1	1	0	0.31	0.01	0.01	0.01	0.01	0.174
FX3910	68755	110	120	WASTE	YES	Upper Dwd	—	35	35	35	8.4	0.02	—	—	0.02	—	—
FX3910	68758	140	150	WASTE	YES	Upper Dwd	—	316	316	316	8.4	0.01	0.01	—	—	—	—
FX3928	69380	160	170	ORE	YES	Upper Dwd	—	181	181	180	8.7	0.02	—	0.02	—	—	0.128
FX3917	69425	160	170	WASTE	YES	Upper Dwd	—	308	308	308	8.4	0.02	—	0.02	—	—	—
FX3918	69473	140	150	WASTE	YES	Upper Dwd	—	137	137	137	8.3	0.02	—	—	0.02	—	—
FX3918	69476	170	180	WASTE	YES	Upper Dwd	—	233	233	233	8.5	0.02	0.01	0.02	—	—	—
2249	69495	180	190	ORE	YES	Upper Dwd	1	250	250	249	0	0.01	0.01	0.01	0.01	0.01	0.052
2253	69602	190	200	WASTE	YES	Upper Dwd	1	353	353	352	0	0.01	0.01	0.01	0.01	0.01	0.002
FX3922	69660	110	120	WASTE	YES	Upper Dwd	—	67	67	67	8.5	0.02	—	—	0.02	—	0.008
FX3922	69664	150	160	WASTE	YES	Upper Dwd	—	292	292	292	8.8	0.02	0.01	0.01	—	—	0.01
FX3933	70140	160	170	WASTE	YES	Upper Dwd	—	112	112	111	8.3	0.02	—	0.01	—	—	—
FX3931	70220	30	40	WASTE	YES	Upper Dwd	1	114	114	113	8.4	0.04	—	0.01	0.03	—	—
FX3931	70224	70	80	WASTE	YES	Upper Dwd	—	225	225	225	8.5	0.02	—	0.01	—	—	—

Table D-2A. Acid Base Accounting for Upper Deadwood (Historical Data) (Page 10 of 11)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
2290	70667	180	190	WASTE	YES	Upper Dwd	9	99	11	90	0	0.28	0.01	0.01	0.01	0.01	0.003
FX4117	76264	40	50	WASTE	NO	Upper Dwd	—	11	11	10	7.8	0.01	—	0.01	—	—	—
FX4118	76268	30	40	WASTE	NO	Upper Dwd	—	7	7	7	7.6	—	—	—	—	—	—
FX4119	76270	0	10	WASTE	NO	Upper Dwd	3	16	5.3	13	7.8	0.1	—	0.02	0.04	0.04	0.01
FX4119	76274	40	50	WASTE	NO	Upper Dwd	—	38	38	38	8	—	—	—	—	—	—
FX4247	80832	100	110	ORE	YES	Upper Dwd	4	75	18.8	71	0	0.13	—	—	0.05	0.07	0.035
FX4247	80837	150	160	WASTE	YES	Upper Dwd	—	218	218	217	0	—	—	—	—	0.01	—
FX4247	80840	180	190	WASTE	YES	Upper Dwd	—	332	332	332	0	0.02	—	—	—	0.02	—
FX4248	80889	70	80	WASTE	YES	Upper Dwd	2	16	8	14	0	0.07	0.01	—	0.03	0.03	—
FX4248	80897	150	160	WASTE	YES	Upper Dwd	—	188	188	188	0	0.02	—	—	—	0.02	—
FX4248	80901	190	200	WASTE	YES	Upper Dwd	—	409	409	408	0	0.03	0.02	—	—	0.02	—
FX4249	80973	70	80	ORE	YES	Upper Dwd	3	42	14	40	0	0.11	0.03	—	0.02	0.07	0.015
FX4249	80981	150	160	WASTE	YES	Upper Dwd	—	300	300	299	0	0.02	—	—	—	0.02	—
FX4249	80985	190	200	WASTE	YES	Upper Dwd	—	347	347	346	0	0.02	—	—	—	0.02	—
FX4250	81033	70	80	WASTE	YES	Upper Dwd	—	276	276	276	0	0.01	—	—	—	0.01	—
FX4250	81037	110	120	WASTE	YES	Upper Dwd	—	203	203	202	0	0.02	—	—	—	0.02	—
FX4250	81041	150	160	WASTE	YES	Upper Dwd	—	315	315	314	0	0.02	—	—	—	0.02	—
FX4251	81093	70	80	WASTE	YES	Upper Dwd	—	388	388	388	0	0.01	—	—	—	0.01	—
FX4251	81097	110	120	WASTE	YES	Upper Dwd	—	176	176	176	0	0.02	—	—	—	0.02	—
FX4251	81101	150	160	WASTE	YES	Upper Dwd	—	365	365	364	0	0.02	—	—	—	0.02	—
FX4412	83529	70	80	ORE	YES	Upper Dwd		251		251	0	0.03				0.03	0.021
FX4461	83680	70	80	ORE	YES	Upper Dwd		157		156	0	0.03				0.03	0.066
FX4458	83728	70	80	WASTE	YES	Upper Dwd	1	331		330	0	0.03				0.02	—
FX4430	83836	190	200	WASTE	YES	Upper Dwd		324		323	0	0.03				0.02	—
FX4416	83879	70	80	WASTE	YES	Upper Dwd		241		240	0	0.03				0.03	—
FX4418	83926	70	80	ORE	YES	Upper Dwd	4	146		142	0	0.15	0.02			0.14	0.046
FX4418	83930	110	120	ORE	YES	Upper Dwd	8	35		28	0	0.26	0.02			0.24	0.602
FX4419	83972	70	80	WASTE	YES	Upper Dwd		351		351	0	0.03				0.03	—
FX4419	83976	110	120	WASTE	YES	Upper Dwd		292		291	0	0.03				0.03	—
FX4421	84070	110	120	WASTE	YES	Upper Dwd		400		399	0	0.03			0.01	0.02	—
FX4427	84229	190	200	WASTE	YES	Upper Dwd		285		284	0	0.03			0.01	0.02	—
FX4417	84322	70	80	WASTE	YES	Upper Dwd		330		329	0	0.03				0.03	—
FX4425	84372	110	120	ORE	YES	Upper Dwd		235		234	0	0.03				0.03	0.018
FX4425	84376	150	160	WASTE	YES	Upper Dwd		332		331	0	0.03		0.01		0.02	—

Table D-2A. Acid Base Accounting for Upper Deadwood (Historical Data) (Page 11 of 11)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4426	84425	110	120	WASTE	YES	Upper Dwd		243		242	0	0.03				0.03	—
FX4426	84429	150	160	WASTE	YES	Upper Dwd		373		372	0	0.03			0.01	0.02	—
FX4424	84626	70	80	WASTE	YES	Upper Dwd		213		212	0	0.03				0.03	—
FX4424	84630	110	120	WASTE	YES	Upper Dwd		299		298	0	0.03			0.01	0.02	—
FX4459	84772	70	80	WASTE	YES	Upper Dwd	1	371		370	0	0.03		0.01		0.02	—
FX4449	85668	30	40	ORE	YES	Upper Dwd	7	10		3	0	0.29	0.07		0.09	0.13	0.028
FX4449	85672	70	80	WASTE	YES	Upper Dwd		338		337	0	0.03				0.02	—
FX4449	85676	110	120	WASTE	YES	Upper Dwd		63		62	0	0.03				0.03	—
FX4449	85680	150	160	WASTE	YES	Upper Dwd		304		304	0	0.03				0.02	—
FX4449	85684	190	200	ORE	YES	Upper Dwd		108		107	0	0.02				0.02	0.076
FX4450	85741	110	120	ORE	YES	Upper Dwd	1	109		108	0	0.04				0.04	0.112
FX4450	85745	150	160	ORE	YES	Upper Dwd	5	44		39	0	0.29	0.12			0.21	0.123
FX4450	85749	190	200	WASTE	YES	Upper Dwd		355		354	0	0.03				0.02	—
FX4451	85807	70	80	WASTE	YES	Upper Dwd		306		305	0	0.03		0.01		0.02	—
FX4451	85811	110	120	ORE	YES	Upper Dwd		128		127	0	0.03				0.03	0.022
FX4451	85819	190	200	ORE	YES	Upper Dwd		154		153	0	0.03				0.03	0.047
FX4452	85887	70	80	WASTE	YES	Upper Dwd		330		329	0	0.02			0.01	0.02	—
FX4452	85891	110	120	WASTE	YES	Upper Dwd		163		163	0	0.02				0.03	—
FX4452	85895	150	160	WASTE	YES	Upper Dwd		318		318	0	0.03				0.03	—
FX4452	85899	190	200	ORE	YES	Upper Dwd		318		318	0	0.03				0.03	0.026
FX4462	85942	70	80	WASTE	YES	Upper Dwd	1	347		346	0	0.04		0.02		0.02	—
FX4462	85946	110	120	WASTE	YES	Upper Dwd	1	300		298	0	0.04				0.03	—
FX4460	86147	70	80	WASTE	YES	Upper Dwd	1	237		236	0	0.04				0.03	—
FX4460	86151	110	120	WASTE	YES	Upper Dwd	1	214		213	0	0.04				0.03	—
2810	92350	90	100	WASTE	YES	Upper Dwd	8	1	0.1	−7	0	0.25	0.05	0.01	0.01	0.2	0.003
2824	92644	130	140	WASTE	YES	Upper Dwd	13	6	0.5	−7	0	0.42	0.07	0.01	0.06	0.29	0.001
2827	92681	40	50	WASTE	YES	Upper Dwd	7	1	0.1	−7	0	0.21	0.02	0.01	0.03	0.16	0.001
2904	95953	130	140	WASTE	YES	Upper Dwd	3	1	0.3	−2	0	0.09	0.04	0.01	0.02	0.03	0.009

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 1 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4748	28158	160	170	WASTE	FALSE	Upper Dwd	1.6	0.5	0.3	-1.1	7.56	0.14	0.09	0.05	—
W21R-4748	28161	170	180	WASTE	FALSE	Upper Dwd	1.6	1.5	0.9	-0.1	7.5	0.13	0.08	0.05	—
W21R-4748	28162	180	190	WASTE	FALSE	Upper Dwd	2.2	1.3	0.6	-0.9	7.47	0.16	0.09	0.07	—
W21R-4748	28163	190	200	WASTE	FALSE	Upper Dwd	<0.6	0.8	#N/A	0.8	7.45	0.03	0.03	<0.02	—
W21R-4748	28164	200	210	WASTE	FALSE	Upper Dwd	<0.6	1	#N/A	1	7.48	0.04	0.05	<0.02	0.001
W21R-4748	28165	210	220	WASTE	FALSE	Upper Dwd	<0.6	0	#N/A	0	7.16	0.21	0.26	<0.02	—
W21R-4748	28166	220	230	WASTE	FALSE	Upper Dwd	<0.6	0.8	#N/A	0.8	7.21	0.14	0.17	<0.02	0.002
W21R-4748	28167	230	240	WASTE	FALSE	Upper Dwd	<0.6	1.8	#N/A	1.8	7.14	0.21	0.22	<0.02	0.01
W21R-4748	28168	240	250	WASTE	FALSE	Upper Dwd	<0.6	2	#N/A	2	7.69	0.04	0.05	<0.02	0.002
W21R-4748	28169	250	260	WASTE	FALSE	Upper Dwd	<0.6	0.8	#N/A	0.8	7.55	0.14	0.17	<0.02	0.001
W21R-4748	28170	260	270	WASTE	FALSE	Upper Dwd	<0.6	46	#N/A	46	7.45	0.17	0.22	<0.02	0.002
W21R-4748	28171	270	280	WASTE	FALSE	Upper Dwd	<0.6	0.7	#N/A	0.7	7.62	0.11	0.16	<0.02	—
W21R-4748	28172	280	290	WASTE	FALSE	Upper Dwd	<0.6	1.2	#N/A	1.2	7.57	0.22	0.24	<0.02	0.001
W21R-4748	28173	290	300	WASTE	FALSE	Upper Dwd	<0.6	3.8	#N/A	3.8	7.6	0.12	0.19	<0.02	—
W21R-4748	28174	300	310	WASTE	FALSE	Upper Dwd	<0.6	4	#N/A	4	7.86	0.02	0.02	<0.02	—
W21R-4748	28175	310	320	WASTE	FALSE	Upper Dwd	<0.6	78	#N/A	78	8.49	<0.02	0.01	<0.02	—
W21R-4748	28176	320	330	WASTE	FALSE	Upper Dwd	<0.6	290	#N/A	290	8.58	<0.02	0.01	<0.02	—
W21R-4748	28177	330	340	WASTE	FALSE	Upper Dwd	<0.6	378	#N/A	378	8.73	<0.02	<0.01	<0.02	—
W21R-4748	28180	340	350	WASTE	FALSE	Upper Dwd	<0.6	306	#N/A	306	8.76	<0.02	0.01	<0.02	—
W21R-4749	28246	180	190	WASTE	FALSE	Upper Dwd	1.6	1	0.6	-0.6	7.54	0.18	0.13	0.05	—
W21R-4749	28247	190	200	WASTE	FALSE	Upper Dwd	<0.6	0	#N/A	0	7.4	0.11	0.11	<0.02	0.002
W21R-4749	28248	200	210	WASTE	FALSE	Upper Dwd	<0.6	1.2	#N/A	1.2	7.86	0.04	0.03	<0.02	0.002
W21R-4749	28249	210	220	WASTE	FALSE	Upper Dwd	<0.6	1.5	#N/A	1.5	7.76	0.03	0.03	<0.02	—
W21R-4749	28250	220	230	WASTE	FALSE	Upper Dwd	<0.6	1.3	#N/A	1.3	7.87	0.06	0.07	<0.02	—
W21R-4749	28251	230	240	WASTE	FALSE	Upper Dwd	<0.6	1.7	#N/A	1.7	7.91	<0.02	0.01	<0.02	—
W21R-4749	28252	240	250	WASTE	FALSE	Upper Dwd	<0.6	1	#N/A	1	7.77	0.05	0.05	<0.02	—
W21R-4749	28253	250	260	WASTE	FALSE	Upper Dwd	<0.6	1.7	#N/A	1.7	7.86	0.06	0.06	<0.02	—
W21R-4750	28337	200	210	WASTE	FALSE	Upper Dwd	<0.6	1.2	#N/A	1.2	7.55	<0.02	0.01	<0.02	—
W21R-4750	28338	210	220	WASTE	FALSE	Upper Dwd	<0.6	4.3	#N/A	4.3	7.56	<0.02	0.01	<0.02	—
W21R-4750	28339	220	230	WASTE	FALSE	Upper Dwd	<0.6	9	#N/A	9	7.71	<0.02	0.01	<0.02	0.001
W21R-4750	28340	230	240	WASTE	FALSE	Upper Dwd	<0.6	10.9	#N/A	10.9	8.04	<0.02	0.01	<0.02	—
W21R-4750	28341	240	250	WASTE	FALSE	Upper Dwd	<0.6	78.8	#N/A	78.8	8.42	<0.02	0.01	<0.02	—
W21R-4750	28342	250	260	WASTE	FALSE	Upper Dwd	<0.6	160	#N/A	160	8.63	<0.02	0.01	<0.02	—
W21R-4750	28343	260	270	WASTE	FALSE	Upper Dwd	<0.6	177	#N/A	177	8.72	<0.02	0.01	<0.02	—

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 2 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4750	28344	270	280	WASTE	FALSE	Upper Dwd	<0.6	215	#N/A	215	8.96	<0.02	<0.01	<0.02	—
W21R-4750	28345	280	290	WASTE	FALSE	Upper Dwd	<0.6	214	#N/A	214	9.07	<0.02	<0.01	<0.02	—
W21R-4750	28346	290	300	WASTE	FALSE	Upper Dwd	<0.6	311	#N/A	311	9.04	<0.02	<0.01	<0.02	—
W21R-4750	28347	300	310	WASTE	FALSE	Upper Dwd	<0.6	296	#N/A	296	8.93	<0.02	<0.01	<0.02	—
W21R-4750	28348	310	320	WASTE	FALSE	Upper Dwd	<0.6	374	#N/A	374	8.85	<0.02	<0.01	<0.02	—
W21R-4750	28349	320	330	WASTE	FALSE	Upper Dwd	<0.6	364	#N/A	364	8.78	<0.02	<0.01	<0.02	—
W21R-4750	28350	330	340	WASTE	FALSE	Upper Dwd	<0.6	304	#N/A	304	9.04	<0.02	<0.01	<0.02	—
W21R-4751	28398			WASTE	TRUE	Upper Dwd	<0.6	2	#N/A	2	7.34	<0.02	0.01	<0.02	—
W21R-4751	28402			WASTE	TRUE	Upper Dwd	<0.6	233	#N/A	233	8.53	<0.02	0.01	<0.02	—
W21R-4751	28408			WASTE	FALSE	Upper Dwd	<0.6	287	#N/A	287	8.43	<0.02	<0.01	<0.02	—
W21R-4751	28412			WASTE	TRUE	Upper Dwd	<0.6	305	#N/A	305	8.58	<0.02	<0.01	<0.02	—
W21R-4753	28511	100	110	WASTE	FALSE	Upper Dwd	<0.6	1.7	#N/A	1.7	8.11	0.02	0.02	<0.02	—
W21R-4753	28515	140	150	WASTE	FALSE	Upper Dwd	<0.6	313	#N/A	313	8.87	<0.02	0.01	<0.02	—
W21R-4753	28521	180	190	WASTE	FALSE	Upper Dwd	<0.6	196	#N/A	196	8.92	<0.02	0.01	<0.02	—
W21R-4753	28525	220	230	WASTE	FALSE	Upper Dwd	<0.6	246	#N/A	246	8.94	<0.02	0.01	<0.02	—
W21R-4754	28606	110	120	WASTE	FALSE	Upper Dwd	<0.6	380	#N/A	380	8.67	0.06	0.05	<0.02	—
W21R-4754	28610	150	160	WASTE	FALSE	Upper Dwd	<0.6	251	#N/A	251	8.81	<0.02	0.01	<0.02	—
W21R-4754	28616	190	200	WASTE	FALSE	Upper Dwd	<0.6	272	#N/A	272	8.94	<0.02	0.02	<0.02	—
W21R-4755	28667	30	40	WASTE	FALSE	Upper Dwd	0.6	4	6.7	3.4	7.17	0.03	0.01	0.02	—
W21R-4755	28671	70	80	WASTE	FALSE	Upper Dwd	<0.6	3	#N/A	3	7.89	<0.02	0.01	<0.02	—
W21R-4755	28675	110	120	WASTE	FALSE	Upper Dwd	<0.6	233	#N/A	233	8.99	<0.02	0.01	<0.02	—
W21R-4755	28679	150	160	WASTE	FALSE	Upper Dwd	<0.6	183	#N/A	183	9.06	<0.02	<0.01	<0.02	—
W21R-4755	28685	190	200	WASTE	FALSE	Upper Dwd	<0.6	304	#N/A	304	8.98	<0.02	<0.01	<0.02	—
W21R-4755	28689	230	240	WASTE	FALSE	Upper Dwd	<0.6	265	#N/A	265	9.06	<0.02	0.01	<0.02	—
W21R-4756	28722	10	20	WASTE	FALSE	Upper Dwd	<0.6	1.5	#N/A	1.5	7.45	0.13	0.14	<0.02	—
W21R-4756	28726	50	60	WASTE	FALSE	Upper Dwd	<0.6	159	#N/A	159	9.02	<0.02	0.01	<0.02	—
W21R-4756	28730	90	100	WASTE	FALSE	Upper Dwd	<0.6	207	#N/A	207	9.06	<0.02	<0.01	<0.02	—
W21R-4756	28734	130	140	WASTE	FALSE	Upper Dwd	<0.6	259	#N/A	259	8.99	<0.02	<0.01	<0.02	—
W21R-4757	28802	90	100	WASTE	FALSE	Upper Dwd	<0.6	380	#N/A	380	9.29	<0.02	0.01	<0.02	—
W21R-4757	28806	130	140	WASTE	FALSE	Upper Dwd	<0.6	243	#N/A	243	9.17	<0.02	0.01	<0.02	—
W21R-4757	28812	170	180	WASTE	FALSE	Upper Dwd	<0.6	194	#N/A	194	9.25	<0.02	<0.01	<0.02	—
W21R-4757	28816	210	220	WASTE	FALSE	Upper Dwd	<0.6	313	#N/A	313	9.02	<0.02	0.01	<0.02	—
W21R-4758	28892	50	60	WASTE	FALSE	Upper Dwd	<0.6	108	#N/A	108	8.5	<0.02	<0.01	<0.02	—
W21R-4758	28896	90	100	ORE	FALSE	Upper Dwd	<0.6	20.5	#N/A	20.5	8.24	0.41	0.43	<0.02	0.055

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 3 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4758	28900	130	140	WASTE	FALSE	Upper Dwd	<0.6	274	#N/A	274	9.09	<0.02	0.02	<0.02	0.002
W21R-4758	28906	170	180	WASTE	FALSE	Upper Dwd	<0.6	269	#N/A	269	9.19	<0.02	0.01	<0.02	—
W21R-4759	28951	140	150	WASTE	FALSE	Upper Dwd	<0.6	296	#N/A	296	9.12	<0.02	0.02	<0.02	0.001
W21R-4759	28957	180	190	WASTE	FALSE	Upper Dwd	<0.6	254	#N/A	254	8.84	<0.02	0.01	<0.02	—
W21R-4759	28961	220	230	WASTE	FALSE	Upper Dwd	<0.6	292	#N/A	292	8.96	<0.02	0.01	<0.02	—
W21R-4764	29328	20	30	WASTE	FALSE	Upper Dwd	<0.6	5.2	#N/A	5.2	8.28	<0.02	<0.01	<0.02	—
W21R-4765	29433	110	120	WASTE	TRUE	Upper Dwd	<0.6	1.5	#N/A	1.5	7.81	0.07	0.07	<0.02	0.006
W21R-4765	29437	150	160	WASTE	TRUE	Upper Dwd	<0.6	9.5	#N/A	9.5	7.51	0.55	0.63	<0.02	0.002
W21R-4765	29443	190	200	WASTE	TRUE	Upper Dwd	<0.6	201	#N/A	201	8.34	0.03	0.03	<0.02	—
W21R-4765	29447	230	240	WASTE	FALSE	Upper Dwd	<0.6	60.2	#N/A	60.2	8.51	0.14	0.16	<0.02	0.003
W21R-4766	29519	30	40	WASTE	FALSE	Upper Dwd	<0.6	27.5	#N/A	27.5	8.04	0.05	0.05	<0.02	0.003
W21R-4767	29595	70	80	WASTE	FALSE	Upper Dwd	<0.6	183	#N/A	183	8.58	<0.02	<0.01	<0.02	—
W21R-4769	29771	100	110	WASTE	FALSE	Upper Dwd	<0.6	80.3	#N/A	80.3	8.29	<0.02	0.02	<0.02	—
W21R-4769	29775	140	150	WASTE	FALSE	Upper Dwd	<0.6	13.4	#N/A	13.4	8.24	0.04	0.04	<0.02	0.002
W21R-4769	29781	180	190	WASTE	FALSE	Upper Dwd	<0.6	245	#N/A	245	8.54	<0.02	0.01	<0.02	—
W21R-4769	29785	220	230	WASTE	FALSE	Upper Dwd	<0.6	204	#N/A	204	8.57	<0.02	0.02	<0.02	—
W21R-4771	29894	10	20	WASTE	FALSE	Upper Dwd	<0.6	138	#N/A	138	8.39	<0.02	<0.01	<0.02	0.006
W21R-4771	29902	90	100	WASTE	FALSE	Upper Dwd	<0.6	291	#N/A	291	8.63	0.02	0.01	<0.02	—
W21R-4772	29972	20	30	WASTE	FALSE	Upper Dwd	<0.6	10.4	#N/A	10.4	7.7	<0.02	<0.01	<0.02	—
W21R-4773	30068	190	200	WASTE	FALSE	Upper Dwd	<0.6	3.2	#N/A	3.2	7.25	0.5	0.55	<0.02	0.01
W21R-4773	30072	230	240	WASTE	FALSE	Upper Dwd	<0.6	105	#N/A	105	8.44	0.15	0.18	<0.02	0.003
W21R-4773	30076	270	280	ORE	FALSE	Upper Dwd	1.3	31.9	24.5	30.6	8.15	0.67	0.63	0.04	0.016
W21R-4774	30154	130	140	ORE	FALSE	Upper Dwd	1.6	1.3	0.8	-0.3	7.4	0.08	0.03	0.05	0.024
W21R-4774	30160	170	180	WASTE	FALSE	Upper Dwd	<0.6	26.3	#N/A	26.3	8.28	0.05	0.05	<0.02	0.007
W21R-4774	30164	210	220	WASTE	FALSE	Upper Dwd	<0.6	203	#N/A	203	8.6	<0.02	0.01	<0.02	—
W21R-4774	30168	250	260	WASTE	FALSE	Upper Dwd	<0.6	220	#N/A	220	8.49	<0.02	0.01	<0.02	—
W21R-4775	30252	200	210	WASTE	FALSE	Upper Dwd	<0.6	277	#N/A	277	8.54	<0.02	0.02	<0.02	0.006
W21R-4775	30256	240	250	ORE	FALSE	Upper Dwd	<0.6	8.2	#N/A	8.2	8.29	0.11	0.12	<0.02	0.014
W21R-4775	30260	280	290	ORE	FALSE	Upper Dwd	<0.6	9.8	#N/A	9.8	8.15	0.03	0.04	<0.02	0.011
W21R-4775	30264	320	330	WASTE	FALSE	Upper Dwd	<0.6	12.6	#N/A	12.6	8.37	<0.02	0.01	<0.02	0.006
W21R-4776	30338	140	150	WASTE	FALSE	Upper Dwd	<0.6	163	#N/A	163	8.67	<0.02	0.01	<0.02	0.006
W21R-4776	30344	180	190	WASTE	FALSE	Upper Dwd	<0.6	38.7	#N/A	38.7	8.38	0.07	0.06	<0.02	0.003
W21R-4776	30348	220	230	WASTE	FALSE	Upper Dwd	<0.6	32.7	#N/A	32.7	8.7	<0.02	0.01	<0.02	—
W21R-4776	30352	260	270	WASTE	FALSE	Upper Dwd	<0.6	14.6	#N/A	14.6	8.17	0.02	0.01	<0.02	0.004

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 4 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4777	30439	190	200	ORE	FALSE	Upper Dwd	<0.6	4.8	#N/A	4.8	7.75	0.51	0.51	<0.02	0.012
W21R-4777	30443	230	240	WASTE	FALSE	Upper Dwd	<0.6	95.5	#N/A	95.5	8.44	0.17	0.23	<0.02	—
W21R-4777	30447	270	280	WASTE	FALSE	Upper Dwd	<0.6	258	#N/A	258	8.74	0.02	0.03	<0.02	—
W21R-4778	30510	80	90	WASTE	FALSE	Upper Dwd	<0.6	225	#N/A	225	8.54	<0.02	0.01	<0.02	—
W21R-4778	30514	120	130	WASTE	FALSE	Upper Dwd	<0.6	261	#N/A	261	8.86	<0.02	0.01	<0.02	—
W21R-4778	30518	160	170	WASTE	FALSE	Upper Dwd	<0.6	221	#N/A	221	8.74	<0.02	0.01	<0.02	—
W21R-4778	30524	200	210	WASTE	FALSE	Upper Dwd	<0.6	276	#N/A	276	8.74	<0.02	0.01	<0.02	—
W21R-4779	30602	210	220	WASTE	FALSE	Upper Dwd	<0.6	6	#N/A	6	7.18	<0.02	0.01	<0.02	—
W21R-4779	30603	220	230	WASTE	FALSE	Upper Dwd	<0.6	8.7	#N/A	8.7	7.21	<0.02	0.01	<0.02	—
W21R-4779	30604	230	240	WASTE	FALSE	Upper Dwd	<0.6	80	#N/A	80	7.2	<0.02	0.01	<0.02	—
W21R-4779	30605	240	250	WASTE	FALSE	Upper Dwd	<0.6	154	#N/A	154	7.45	<0.02	0.01	<0.02	—
W21R-4779	30606	250	260	WASTE	FALSE	Upper Dwd	<0.6	221	#N/A	221	8.01	<0.02	<0.01	<0.02	—
W21R-4779	30607	260	270	WASTE	FALSE	Upper Dwd	<0.6	272	#N/A	272	8.39	<0.02	<0.01	<0.02	—
W21R-4779	30608	270	280	WASTE	FALSE	Upper Dwd	<0.6	265	#N/A	265	8.25	<0.02	<0.01	<0.02	—
W21R-4779	30609	280	290	WASTE	FALSE	Upper Dwd	<0.6	249	#N/A	249	8.28	<0.02	<0.01	<0.02	—
W21R-4779	30610	290	300	WASTE	FALSE	Upper Dwd	<0.6	271	#N/A	271	8.41	<0.02	<0.01	<0.02	—
W21R-4779	30611	300	310	WASTE	FALSE	Upper Dwd	<0.6	253	#N/A	253	8.44	<0.02	<0.01	<0.02	—
W21R-4779	30612	310	320	WASTE	FALSE	Upper Dwd	<0.6	285	#N/A	285	8.46	<0.02	<0.01	<0.02	—
W21R-4779	30613	320	330	WASTE	FALSE	Upper Dwd	<0.6	266	#N/A	266	8.39	<0.02	<0.01	<0.02	—
W21R-4779	30614	330	340	WASTE	FALSE	Upper Dwd	<0.6	355	#N/A	355	8.29	<0.02	<0.01	<0.02	—
W21R-4780	30674	110	120	WASTE	TRUE	Upper Dwd	20.9	0.2	<0.1	-20.7	6.82	1.01	0.34	0.67	0.003
W21R-4780	30675	120	130	WASTE	FALSE	Upper Dwd	<0.6	1.5	#N/A	1.5	6.77	0.49	0.52	<0.02	0.003
W21R-4780	30683	180	190	WASTE	FALSE	Upper Dwd	1.9	0.5	0.3	-1.4	7.23	0.21	0.15	0.06	0.001
W21R-4780	30684	190	200	WASTE	FALSE	Upper Dwd	6.3	0.2	<0.1	-6.1	7.25	0.33	0.13	0.2	—
W21R-4780	30685	200	210	WASTE	FALSE	Upper Dwd	5.9	1	0.2	-4.9	7.05	0.39	0.2	0.19	0.001
W21R-4780	30686	210	220	WASTE	FALSE	Upper Dwd	1.9	1.2	0.6	-0.7	7.09	0.1	0.04	0.06	0.001
W21R-4780	30687	220	230	WASTE	FALSE	Upper Dwd	0.6	1	1.7	0.4	7.11	0.18	0.16	0.02	—
W21R-4780	30688	230	240	WASTE	FALSE	Upper Dwd	<0.6	1.5	#N/A	1.5	7.15	0.13	0.15	<0.02	—
W21R-4780	30689	240	250	WASTE	FALSE	Upper Dwd	0.9	1.5	1.7	0.6	7.03	0.68	0.65	0.03	—
W21R-4780	30690	250	260	WASTE	FALSE	Upper Dwd	0.6	1.3	2.2	0.7	7.01	0.26	0.24	0.02	—
W21R-4780	30691	260	270	WASTE	FALSE	Upper Dwd	<0.6	1	#N/A	1	7.07	0.11	0.13	<0.02	—
W21R-4780	30691	260	270	WASTE	FALSE	Upper Dwd	<0.6	2.5	#N/A	2.5	7.31	0.05	0.05	<0.02	—
W21R-4780	30693	280	290	WASTE	FALSE	Upper Dwd	<0.6	5	#N/A	5	7.42	0.07	0.08	<0.02	—
W21R-4780	30694	290	300	WASTE	FALSE	Upper Dwd	0.9	5.3	5.9	4.4	7.41	0.21	0.18	0.03	—

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 5 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4780	30695	300	310	WASTE	FALSE	Upper Dwd	0.6	2.5	4.2	1.9	7.39	0.12	0.1	0.02	—
W21R-4780	30696	310	320	WASTE	TRUE	Upper Dwd	<0.6	5.8	#N/A	5.8	7.82	0.06	0.05	<0.02	—
W21R-4780	30697	320	330	WASTE	TRUE	Upper Dwd	<0.6	9.9	#N/A	9.9	7.85	0.02	0.02	<0.02	—
W21R-4781	30750	150	160	ORE	FALSE	Upper Dwd	<0.6	0.3	#N/A	0.3	6.42	0.81	0.93	<0.02	0.024
W21R-4781	30751	160	170	ORE	FALSE	Upper Dwd	0.6	-0.3	#N/A	-0.9	6.05	0.88	0.86	0.02	0.103
W21R-4781	30754	170	180	ORE	FALSE	Upper Dwd	5	-0.2	#N/A	-5.2	6.02	1.39	1.23	0.16	0.014
W21R-4781	30755	180	190	ORE	FALSE	Upper Dwd	1.9	-0.3	#N/A	-2.2	6.11	0.94	0.88	0.06	0.013
W21R-4781	30756	190	200	WASTE	FALSE	Upper Dwd	2.5	0	#N/A	-2.5	6.27	0.73	0.65	0.08	0.008
W21R-4781	30757	200	210	ORE	FALSE	Upper Dwd	1.9	0.3	0.2	-1.6	6.67	0.49	0.43	0.06	0.065
W21R-4781	30758	210	220	ORE	FALSE	Upper Dwd	6.6	0	#N/A	-6.6	6.55	0.84	0.63	0.21	0.061
W21R-4781	30759	220	230	ORE	FALSE	Upper Dwd	2.2	0.7	0.3	-1.5	6.61	0.59	0.52	0.07	0.305
W21R-4781	30760	230	240	ORE	FALSE	Upper Dwd	1.9	1	0.5	-0.9	7.04	0.54	0.48	0.06	0.17
W21R-4781	30761	240	250	ORE	FALSE	Upper Dwd	<0.6	0.7	#N/A	0.7	7.24	0.52	0.52	<0.02	0.087
W21R-4781	30762	250	260	ORE	FALSE	Upper Dwd	0.9	0.3	0.3	-0.6	7.48	0.21	0.18	0.03	0.093
W21R-4781	30791	490	500	WASTE	FALSE	Upper Dwd	6.3	0.2	<0.1	-6.1	7.49	0.43	0.23	0.2	—
W21R-4781	30792	500	510	WASTE	TRUE	Upper Dwd	<0.6	0.5	#N/A	0.5	7.57	0.06	0.05	<0.02	—
W21R-4783	30916	180	190	WASTE	FALSE	Upper Dwd	<0.6	1.5	#N/A	1.5	7.62	0.02	0.02	<0.02	—
W21R-4783	30917	190	200	WASTE	FALSE	Upper Dwd	<0.6	1	#N/A	1	7.59	<0.02	0.01	<0.02	—
W21R-4783	30918	200	210	WASTE	TRUE	Upper Dwd	<0.6	1.2	#N/A	1.2	7.19	0.05	0.05	<0.02	—
W21R-4783	30919	210	220	WASTE	FALSE	Upper Dwd	<0.6	1.3	#N/A	1.3	7.18	<0.02	0.02	<0.02	—
W21R-4783	30949	460	470	WASTE	TRUE	Upper Dwd	<0.6	0.5	#N/A	0.5	7.63	<0.02	0.01	<0.02	0.004
W21R-4783	30950	470	480	WASTE	FALSE	Upper Dwd	<0.6	6.5	#N/A	6.5	7.8	<0.02	0.01	<0.02	0.003
W21R-4784	30990	100	110	WASTE	FALSE	Upper Dwd	<0.6	1.2	#N/A	1.2	7.52	0.04	0.05	<0.02	—
W21R-4784	30991	110	120	WASTE	FALSE	Upper Dwd	<0.6	0.8	#N/A	0.8	7.63	0.04	0.05	<0.02	—
W21R-4784	30992	120	130	WASTE	TRUE	Upper Dwd	<0.6	1.5	#N/A	1.5	8	0.08	0.09	<0.02	—
W21R-4784	31002	200	210	WASTE	FALSE	Upper Dwd	0.6	1	1.7	0.4	7.99	0.04	0.02	0.02	0.001
W21R-4784	31003	210	220	WASTE	FALSE	Upper Dwd	<0.6	1	#N/A	1	8.15	0.07	0.06	<0.02	—
W21R-4784	31004	220	230	WASTE	FALSE	Upper Dwd	<0.6	1	#N/A	1	8.29	0.02	0.02	<0.02	—
W21R-4784	31005	230	240	WASTE	FALSE	Upper Dwd	<0.6	0.7	#N/A	0.7	8.31	<0.02	0.01	<0.02	—
W21R-4784	31006	240	250	WASTE	TRUE	Upper Dwd	<0.6	1	#N/A	1	8.18	<0.02	0.02	<0.02	—
W21R-4784	31007	250	260	WASTE	TRUE	Upper Dwd	<0.6	0.8	#N/A	0.8	8.26	<0.02	0.01	<0.02	—
W21R-4784	31008	260	270	WASTE	FALSE	Upper Dwd	<0.6	1.5	#N/A	1.5	8.24	<0.02	0.01	<0.02	—
W21R-4784	31009	270	280	WASTE	FALSE	Upper Dwd	<0.6	1.3	#N/A	1.3	8.15	<0.02	0.01	<0.02	—
W21R-4784	31010	280	290	WASTE	FALSE	Upper Dwd	<0.6	3	#N/A	3	8.08	<0.02	0.01	<0.02	—

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 6 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4784	31011	290	300	WASTE	FALSE	Upper Dwd	<0.6	1.7	#N/A	1.7	8.2	<0.02	0.01	<0.02	—
W21R-4784	31012	300	310	WASTE	FALSE	Upper Dwd	<0.6	4	#N/A	4	8.31	0.03	0.02	<0.02	—
W21R-4784	31013	310	320	WASTE	FALSE	Upper Dwd	<0.6	6.2	#N/A	6.2	8.33	<0.02	0.01	<0.02	—
W21R-4785	31062	100	110	WASTE	FALSE	Upper Dwd	<0.6	1.3	#N/A	1.3	7.87	0.15	0.14	<0.02	0.007
W21R-4785	31063	110	120	WASTE	FALSE	Upper Dwd	<0.6	1.2	#N/A	1.2	7.73	0.08	0.08	<0.02	0.008
W21R-4785	31064	120	130	WASTE	FALSE	Upper Dwd	<0.6	0.8	#N/A	0.8	7.58	0.03	0.03	<0.02	0.004
W21R-4785	31066	140	150	WASTE	FALSE	Upper Dwd	<0.6	1.3	#N/A	1.3	7.46	0.02	0.02	<0.02	0.002
W21R-4785	31077	230	240	WASTE	FALSE	Upper Dwd	<0.6	-0.3	#N/A	-0.3	7.74	0.04	0.03	<0.02	0.007
W21R-4785	31078	240	250	WASTE	FALSE	Upper Dwd	<0.6	-0.5	#N/A	-0.5	7.49	0.03	0.02	<0.02	0.004
W21R-4785	31079	250	260	WASTE	FALSE	Upper Dwd	0.6	-1.2	#N/A	-1.8	7.14	0.1	0.08	0.02	0.003
W21R-4785	31080	260	270	WASTE	FALSE	Upper Dwd	<0.6	0	#N/A	0	7.5	0.03	0.03	<0.02	0.002
W21R-4785	31081	270	280	WASTE	FALSE	Upper Dwd	<0.6	0	#N/A	0	7.41	0.04	0.03	<0.02	0.002
W21R-4785	31082	280	290	WASTE	FALSE	Upper Dwd	1.6	2.3	1.4	0.7	7.33	0.15	0.1	0.05	0.002
W21R-4785	31083	290	300	WASTE	FALSE	Upper Dwd	2.8	3.3	1.2	0.5	7.36	0.29	0.2	0.09	—
W21R-4785	31084	300	310	WASTE	TRUE	Upper Dwd	0.9	4.8	5.3	3.9	7.48	0.11	0.08	0.03	—
W21R-4785	31085	310	320	WASTE	TRUE	Upper Dwd	<0.6	4	#N/A	4	7.39	0.03	0.02	<0.02	—
W21R-4785	31086	320	330	WASTE	TRUE	Upper Dwd	0.6	3	5	2.4	7.58	0.04	0.02	0.02	—
W21R-4786	31136	120	130	WASTE	FALSE	Upper Dwd	<0.6	0.5	#N/A	0.5	7.17	0.2	0.22	<0.02	0.005
W21R-4786	31137	130	140	ORE	TRUE	Upper Dwd	1.6	1.8	1.1	0.2	6.61	0.3	0.25	0.05	0.032
W21R-4786	31138	140	150	WASTE	TRUE	Upper Dwd	<0.6	1.3	#N/A	1.3	6.02	0.77	0.84	<0.02	0.007
W21R-4786	31139	150	160	WASTE	TRUE	Upper Dwd	1.6	1	0.6	-0.6	6.82	0.42	0.37	0.05	0.005
W21R-4786	31154	280	290	WASTE	FALSE	Upper Dwd	<0.6	6.5	#N/A	6.5	7.88	0.02	0.03	<0.02	0.003
W21R-4786	31155	290	300	ORE	TRUE	Upper Dwd	<0.6	2.7	#N/A	2.7	8.48	<0.02	0.01	<0.02	0.025
W21R-4786	31156	300	310	ORE	TRUE	Upper Dwd	<0.6	1	#N/A	1	8.6	0.02	0.02	<0.02	0.011
W21R-4786	31189	560	570	WASTE	FALSE	Upper Dwd	3.4	0.8	0.2	-2.6	7.7	0.3	0.19	0.11	0.002
W21R-4787	31209	130	140	ORE	FALSE	Upper Dwd	<0.6	0.8	#N/A	0.8	7.41	0.15	0.16	<0.02	0.019
W21R-4787	31210	140	150	WASTE	FALSE	Upper Dwd	1.3	0.5	0.4	-0.8	7.05	0.25	0.21	0.04	0.003
W21R-4787	31211	150	160	WASTE	FALSE	Upper Dwd	1.3	3.7	2.8	2.4	6.91	0.23	0.19	0.04	0.002
W21R-4787	31227	290	300	WASTE	FALSE	Upper Dwd	0.9	4.2	4.7	3.3	7.54	0.41	0.38	0.03	0.002
W21R-4787	31257	520	530	WASTE	FALSE	Upper Dwd	<0.6	2.6	#N/A	2.6	7.16	0.04	0.04	<0.02	—
W21R-4787	31258	530	540	WASTE	FALSE	Upper Dwd	<0.6	2.8	#N/A	2.8	7.28	<0.02	0.01	<0.02	0.001
W21R-4787	31259	540	550	WASTE	TRUE	Upper Dwd	<0.6	2.7	#N/A	2.7	7.28	<0.02	0.02	<0.02	—
W21R-4787	31260	550	560	WASTE	FALSE	Upper Dwd	<0.6	7.1	#N/A	7.1	7.49	<0.02	0.01	<0.02	—
W21R-4787	31261	560	570	WASTE	FALSE	Upper Dwd	<0.6	12.4	#N/A	12.4	7.8	<0.02	0.01	<0.02	—

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 7 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4788	31281	130	140	WASTE	FALSE	Upper Dwd	<0.6	0.5	#N/A	0.5	6.59	0.35	0.37	<0.02	—
W21R-4788	31282	140	150	WASTE	FALSE	Upper Dwd	5	0.3	<0.1	-4.7	5.69	0.65	0.49	0.16	—
W21R-4788	31283	150	160	WASTE	FALSE	Upper Dwd	2.2	3.7	1.7	1.5	6.3	0.43	0.36	0.07	0.002
W21R-4788	31298	280	290	WASTE	FALSE	Upper Dwd	<0.6	2.8	#N/A	2.8	7.73	0.13	0.14	<0.02	—
W21R-4788	31299	290	300	WASTE	FALSE	Upper Dwd	<0.6	2	#N/A	2	7.36	0.25	0.27	<0.02	—
W21R-4788	31329	520	530	WASTE	FALSE	Upper Dwd	<0.6	1.5	#N/A	1.5	7.1	<0.02	0.01	<0.02	—
W21R-4788	31330	530	540	WASTE	FALSE	Upper Dwd	<0.6	1	#N/A	1	6.92	0.03	0.03	<0.02	—
W21R-4788	31331	540	550	WASTE	FALSE	Upper Dwd	<0.6	3.4	#N/A	3.4	7.35	<0.02	0.01	<0.02	—
W21R-4788	31332	550	560	WASTE	FALSE	Upper Dwd	<0.6	7.3	#N/A	7.3	7.65	<0.02	0.01	<0.02	—
W21R-4791	31508	170	180	WASTE	FALSE	Upper Dwd	<0.6	39.3	#N/A	39.3	8.5	0.03	0.04	<0.02	0.002
W21R-4791	31512	210	220	WASTE	FALSE	Upper Dwd	<0.6	253	#N/A	253	8.94	<0.02	<0.01	<0.02	—
W21R-4791	31516	250	260	WASTE	FALSE	Upper Dwd	<0.6	324	#N/A	324	8.91	<0.02	<0.01	<0.02	—
W21R-4792	31569	180	190	WASTE	FALSE	Upper Dwd	0.3	190	-999	190	8.82	0.02	0.02	0.01	—
W21R-4792	31573	220	230	WASTE	FALSE	Upper Dwd	0.3	435	-999	435	8.87	0.01	0.01	0.01	—
W21R-4793	31875	190	200	WASTE	TRUE	Upper Dwd	0.3	230	-999	230	8.96	0.03	0.03	0.01	—
W21R-4793	31879	230	240	WASTE	TRUE	Upper Dwd	0.3	319	-999	319	9.06	0.02	0.01	0.01	—
W21R-4794	31652	90	100	WASTE	FALSE	Upper Dwd	<0.6	332.0	#N/A	<0.6	332.00	<0.02	0.01	<0.02	—
W21R-4795	31710	100	110	WASTE	FALSE	Upper Dwd	<0.6	213.0	#N/A	213.0	8.99	<0.02	<0.01	<0.02	0.001
W21R-4795	31714	140	150	WASTE	FALSE	Upper Dwd	<0.6	176.0	#N/A	176.0	8.71	<0.02	0.01	<0.02	—
W21R-4796	32199	120	130	WASTE	FALSE	Upper Dwd	0.3	73.0	-999	73.0	8.80	0.01	0.01	0.01	0.003
W21R-4797	31782	50	60	WASTE	FALSE	Upper Dwd	<0.6	159.0	#N/A	159.0	8.71	<0.02	<0.01	<0.02	—
W21R-4797	31786	90	100	WASTE	FALSE	Upper Dwd	<0.6	254.0	#N/A	254.0	8.86	<0.02	0.01	<0.02	—
W21R-4798	31910	50	60	WASTE	FALSE	Upper Dwd	0.3	5.00	-999	5.00	7.49	0.01	0.01	0.01	—
W21R-4798	31914	90	100	WASTE	FALSE	Upper Dwd	0.3	173	-999	173	8.35	0.01	0.01	0.01	—
W21R-4801	32268	40	50	WASTE	FALSE	Upper Dwd	<0.6	246.0	#N/A	246.0	8.51	<0.02	0.01	<0.02	—
W21R-4802	32363	50	60	WASTE	FALSE	Upper Dwd	0.3	190	-999	190	8.48	0.03	0.04	0.01	0.002
W21R-4803	32462	100	110	WASTE	FALSE	Upper Dwd	<0.6	241.0	#N/A	241.0	8.89	<0.02	0.01	<0.02	—
W21R-4803	32466	140	150	WASTE	FALSE	Upper Dwd	<0.6	255.0	#N/A	255.0	8.86	<0.02	0.01	<0.02	—
W21R-4804	32531	30	40	WASTE	FALSE	Upper Dwd	<0.6	18.8	#N/A	18.8	7.68	<0.02	0.02	<0.02	—
W21R-4804	32535	70	80	WASTE	FALSE	Upper Dwd	<0.6	6.6	#N/A	6.6	8.20	<0.02	0.01	<0.02	—
W21R-4805	32622	0	10	WASTE	FALSE	Upper Dwd	<0.6	7.1	#N/A	7.1	7.48	0.02	0.01	<0.02	0.009
W21R-4805	32626	40	50	WASTE	FALSE	Upper Dwd	<0.6	76.7	#N/A	76.7	8.62	<0.02	0.01	<0.02	—
W21R-4805	32630	80	90	WASTE	FALSE	Upper Dwd	<0.6	259.0	#N/A	259.0	8.78	<0.02	<0.01	<0.02	—
W21R-4806	32716	0	10	WASTE	FALSE	Upper Dwd	0.3	3.20	-999	3.20	7.38	0.11	0.14	0.01	0.01

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 8 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4806	32724	80	90	WASTE	FALSE	Upper Dwd	0.3	168	-999	168	8.46	0.01	0.02	0.01	0.007
W21R-4807	32818	50	60	WASTE	FALSE	Upper Dwd	<0.6	2.8	#N/A	2.8	7.92	0.06	0.08	<0.02	0.003
W21R-4807	32822	90	100	WASTE	FALSE	Upper Dwd	<0.6	0.5	#N/A	0.5	7.56	0.30	0.35	<0.02	0.008
W21R-4808	32913	60	70	WASTE	TRUE	Upper Dwd	<0.6	3.8	#N/A	3.8	8.03	0.05	0.07	<0.02	0.003
W21R-4808	32917	100	110	WASTE	FALSE	Upper Dwd	0.6	1.7	2.8	1.1	7.82	0.04	0.02	0.02	0.004
W21R-4808	32921	140	150	WASTE	FALSE	Upper Dwd	<0.6	74.9	#N/A	74.9	8.42	<0.02	0.02	<0.02	—
W21R-4809	33005	40	50	WASTE	FALSE	Upper Dwd	<0.6	8.0	#N/A	8.0	7.50	0.13	0.17	<0.02	0.006
W21R-4810	33095	0	10	WASTE	FALSE	Upper Dwd	<0.6	2.3	#N/A	2.3	6.99	<0.02	<0.01	<0.02	—
W21R-4810	33099	40	50	WASTE	FALSE	Upper Dwd	<0.6	7.7	#N/A	7.7	7.67	<0.02	0.01	<0.02	—
W21R-4811	33286	30	40	WASTE	FALSE	Upper Dwd	<0.6	6.4	#N/A	6.4	7.57	0.08	0.09	<0.02	0.009
W21R-4811	33290	70	80	WASTE	FALSE	Upper Dwd	<0.6	221.0	#N/A	221.0	8.46	<0.02	0.01	<0.02	0.002
W21R-4811	33294	110	120	WASTE	FALSE	Upper Dwd	<0.6	218.0	#N/A	218.0	8.54	<0.02	0.01	<0.02	—
W21R-4812	33191	20	30	WASTE	FALSE	Upper Dwd	<0.6	191.0	#N/A	191.0	8.34	<0.02	0.01	<0.02	—
W21R-4812	33199	100	110	ORE	FALSE	Upper Dwd	2.8	11.5	4.1	8.7	8.06	0.70	0.61	0.09	0.364
W21R-4813	33389	120	130	WASTE	FALSE	Upper Dwd	<0.6	8.4	#N/A	8.4	7.86	<0.02	0.01	<0.02	0.007
W21R-4814	33481	120	130	ORE	TRUE	Upper Dwd	2.5	2.2	0.9	-0.3	6.45	0.73	0.65	0.08	0.022
W21R-4815	33547	130	140	WASTE	FALSE	Upper Dwd	<0.6	253.0	#N/A	253.0	8.88	<0.02	0.01	<0.02	—
W21R-4815	33553	170	180	WASTE	FALSE	Upper Dwd	<0.6	201.0	#N/A	201.0	8.89	<0.02	0.01	<0.02	—
W21R-4815	33557	210	220	WASTE	FALSE	Upper Dwd	0.9	421.0	467.7	420.0	8.64	0.04	0.01	0.03	—
W21R-4816	33639	110	120	WASTE	FALSE	Upper Dwd	<0.6	116.0	#N/A	116.0	8.53	<0.02	0.01	<0.02	—
W21R-4816	33643	150	160	WASTE	FALSE	Upper Dwd	<0.6	213.0	#N/A	213.0	8.86	<0.02	0.01	<0.02	—
W21R-4816	33649	190	200	WASTE	FALSE	Upper Dwd	<0.6	285.0	#N/A	285.0	8.76	<0.02	0.01	<0.02	—
W21R-4817	33835	170	180	WASTE	FALSE	Upper Dwd	<0.6	39.8	#N/A	39.8	8.10	<0.02	0.01	<0.02	0.003
W21R-4817	33839	210	220	WASTE	FALSE	Upper Dwd	<0.6	12.2	#N/A	12.2	8.53	<0.02	0.01	<0.02	—
W21R-4818	33734	120	130	WASTE	TRUE	Upper Dwd	<0.6	234.0	#N/A	234.0	8.52	0.04	0.03	<0.02	—
W21R-4818	33738	160	170	WASTE	TRUE	Upper Dwd	<0.6	353.0	#N/A	353.0	8.82	<0.02	0.01	<0.02	—
W21R-4820	33889	160	170	WASTE	FALSE	Upper Dwd	<0.6	365.0	#N/A	365.0	8.74	0.02	0.02	<0.02	—
W21R-4821	33957	120	130	WASTE	FALSE	Upper Dwd	<0.6	237.0	#N/A	237.0	8.75	<0.02	0.01	<0.02	—
W21R-4821	33961	160	170	WASTE	FALSE	Upper Dwd	<0.6	233.0	#N/A	233.0	8.55	<0.02	0.01	<0.02	—
W21R-4823	34137	40	50	WASTE	FALSE	Upper Dwd	<0.6	133.0	#N/A	133.0	8.39	<0.02	0.01	<0.02	—
W21R-4823	34145	120	130	WASTE	FALSE	Upper Dwd	<0.6	280.0	#N/A	280.0	8.87	<0.02	0.01	<0.02	0.005
W21R-4858	36232	160	170	WASTE	FALSE	Upper Dwd	1.9	1.0	0.5	-0.9	6.71	0.47	0.41	0.06	—
W21R-4858	36235	170	180	WASTE	FALSE	Upper Dwd	<0.6	0.0	#N/A	0.0	6.89	0.21	0.20	<0.02	—
W21R-4858	36236	180	190	WASTE	FALSE	Upper Dwd	<0.6	1.2	#N/A	1.2	7.09	0.13	0.16	<0.02	—

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 9 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4858	36237	190	200	WASTE	FALSE	Upper Dwd	<0.6	4.2	#N/A	4.2	7.18	0.04	0.03	<0.02	—
W21R-4858	36238	200	210	WASTE	FALSE	Upper Dwd	0.9	0.2	0.2	-0.7	6.77	0.11	0.08	0.03	—
W21R-4858	36239	210	220	WASTE	FALSE	Upper Dwd	0.9	0.5	0.6	-0.4	7.65	0.27	0.24	0.03	0.001
W21R-4858	36240	220	230	WASTE	FALSE	Upper Dwd	<0.6	0.8	#N/A	0.8	8.16	0.05	0.04	<0.02	—
W21R-4858	36241	230	240	WASTE	FALSE	Upper Dwd	<0.6	0.5	#N/A	0.5	8.25	<0.02	0.01	<0.02	—
W21R-4859	36279	190	200	ORE	TRUE	Upper Dwd	3.8	0.3	<0.1	-3.5	5.93	1.08	0.96	0.12	0.013
W21R-4859	36280	200	210	ORE	TRUE	Upper Dwd	6.9	0.0	#N/A	-6.9	5.86	1.47	1.25	0.22	0.018
W21R-4859	36281	210	220	WASTE	TRUE	Upper Dwd	2.5	0.0	#N/A	-2.5	6.38	0.69	0.61	0.08	0.006
W21R-4859	36282	220	230	WASTE	FALSE	Upper Dwd	0.9	0.3	0.3	-0.6	6.41	0.42	0.39	0.03	0.008
W21R-4859	36283	230	240	ORE	FALSE	Upper Dwd	3.8	0.2	<0.1	-3.6	6.60	0.59	0.47	0.12	0.103
W21R-4859	36284	240	250	ORE	FALSE	Upper Dwd	0.9	0.0	#N/A	-0.9	6.86	0.22	0.19	0.03	0.158
W21R-4859	36285	250	260	ORE	FALSE	Upper Dwd	0.6	0.3	0.5	-0.3	7.18	0.15	0.13	0.02	0.12
W21R-4859	36286	260	270	ORE	FALSE	Upper Dwd	0.9	0.2	0.2	-0.7	7.21	0.18	0.15	0.03	0.126
W21R-4859	36287	270	280	ORE	FALSE	Upper Dwd	0.9	1.0	1.1	0.1	7.87	0.08	0.05	0.03	0.078
W21R-4860	36323	220	230	WASTE	TRUE	Upper Dwd	<0.6	1.5	#N/A	1.5	7.51	0.05	0.04	<0.02	—
W21R-4860	36324	230	240	WASTE	TRUE	Upper Dwd	<0.6	0.2	#N/A	0.2	7.36	<0.02	0.01	<0.02	0.001
W21R-4860	36325	240	250	WASTE	TRUE	Upper Dwd	<0.6	0.5	#N/A	0.5	7.36	0.17	0.18	<0.02	—
W21R-4860	36326	250	260	WASTE	TRUE	Upper Dwd	1.3	1.2	1.0	-0.1	7.08	0.27	0.23	0.04	—
W21R-4860	36327	260	270	WASTE	FALSE	Upper Dwd	0.9	1.3	1.4	0.4	7.05	0.43	0.40	0.03	0.002
W21R-4861	36369	210	220	WASTE	TRUE	Upper Dwd	3.4	0.2	<0.1	-3.2	6.81	0.34	0.23	0.11	0.003
W21R-4861	36370	220	230	WASTE	TRUE	Upper Dwd	1.6	0.2	0.1	-1.4	6.80	0.20	0.15	0.05	0.001
W21R-4861	36371	230	240	WASTE	TRUE	Upper Dwd	<0.6	0.3	#N/A	0.3	7.54	0.04	0.03	<0.02	0.002
W21R-4863	36499	120	130	WASTE	TRUE	Upper Dwd	<0.6	0.7	#N/A	0.7	7.62	0.02	0.02	<0.02	0.002
W21R-4863	36514	250	260	ORE	TRUE	Upper Dwd	<0.6	7.7	#N/A	7.7	7.77	0.37	0.44	<0.02	0.054
W21R-4863	36518	290	300	ORE	TRUE	Upper Dwd	<0.6	0.3	#N/A	0.3	7.67	0.23	0.22	<0.02	0.107
W21R-4789	31356	160	170	WASTE	FALSE	Upper Dwd	0.3	14.3	-999	14.3	7.59	0.06	0.05	0.01	-999
W21R-4792	31559	100	110	ORE	FALSE	Upper Dwd	0.6	0.300	0.5	-0.300	7.24	0.09	0.07	0.02	0.016
W21R-4792	31563	140	150	WASTE	FALSE	Upper Dwd	0.3	7.50	-999	7.50	7.76	1.00	1.18	0.01	0.001
W21R-4794	31644	10	20	WASTE	FALSE	Upper Dwd	<0.6	1.3	#N/A	<0.6	1.30	0.05	0.04	<0.02	—
W21R-4794	31648	50	60	WASTE	FALSE	Upper Dwd	<0.6	323.0	#N/A	<0.6	323.00	<0.02	<0.01	<0.02	—
W21R-4795	31706	60	70	WASTE	FALSE	Upper Dwd	<0.6	333.0	#N/A	333.0	9.00	<0.02	<0.01	<0.02	—
W21R-4796	32195	80	90	WASTE	FALSE	Upper Dwd	0.6	28.3	47.2	27.7	8.53	0.29	0.27	0.02	0.009
W21R-4797	31778	10	20	WASTE	FALSE	Upper Dwd	<0.6	204.0	#N/A	204.0	8.39	<0.02	0.01	<0.02	—
W21R-4798	31906	10	20	WASTE	FALSE	Upper Dwd	0.3	2.50	-999	2.50	7.96	0.01	0.01	0.01	0.007

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 10 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4802	32359	10	20	ORE	FALSE	Upper Dwd	0.3	9.5	-999	9.5	7.34	0.63	0.63	0.01	0.018
W21R-4803	32458	60	70	WASTE	FALSE	Upper Dwd	<0.6	232.0	#N/A	232.0	8.76	<0.02	0.01	<0.02	—
W21R-4807	32814	10	20	WASTE	FALSE	Upper Dwd	<0.6	0.2	#N/A	0.2	6.63	1.15	1.20	<0.02	0.003
W21R-4808	32909	20	30	WASTE	TRUE	Upper Dwd	<0.6	15.8	#N/A	15.8	7.99	<0.02	0.01	<0.02	—
W21R-4813	33385	80	90	WASTE	TRUE	Upper Dwd	<0.6	8.8	#N/A	8.8	7.61	<0.02	0.01	<0.02	0.002
W21R-4814	33477	80	90	WASTE	TRUE	Upper Dwd	<0.6	2.3	#N/A	2.3	7.63	0.04	0.03	<0.02	—
W21R-4815	33543	90	100	WASTE	FALSE	Upper Dwd	<0.6	80.5	#N/A	80.5	8.27	<0.02	0.01	<0.02	—
W21R-4816	33635	70	80	WASTE	FALSE	Upper Dwd	<0.6	161.0	#N/A	161.0	8.33	<0.02	0.01	<0.02	—
W21R-4817	33829	130	140	ORE	FALSE	Upper Dwd	<0.6	12.6	#N/A	12.6	8.40	0.02	0.01	<0.02	0.038
W21R-4818	33730	80	90	WASTE	TRUE	Upper Dwd	2.2	250.0	113.6	248.0	8.44	0.10	0.03	0.07	0.003
W21R-4820	33873	0	10	WASTE	FALSE	Upper Dwd	<0.6	4.5	#N/A	4.5	6.75	0.12	0.16	<0.02	0.001
W21R-4820	33877	40	50	WASTE	FALSE	Upper Dwd	<0.6	310.0	#N/A	310.0	8.43	<0.02	0.01	<0.02	0.002
W21R-4820	33881	80	90	WASTE	FALSE	Upper Dwd	7.2	3.3	0.5	-3.9	7.40	1.90	1.67	0.23	0.006
W21R-4858	36227	110	120	WASTE	FALSE	Upper Dwd	5.3	0.8	0.2	-4.5	6.32	0.64	0.47	0.17	0.005
W21R-4858	36228	120	130	WASTE	FALSE	Upper Dwd	4.1	0.3	0.1	-3.8	6.51	0.60	0.47	0.13	0.004
W21R-4858	36229	130	140	WASTE	FALSE	Upper Dwd	5.3	0.7	0.1	-4.6	6.35	0.45	0.28	0.17	0.002
W21R-4858	36230	140	150	WASTE	FALSE	Upper Dwd	3.4	0.5	0.1	-2.9	6.55	0.28	0.17	0.11	0.001
W21R-4858	36231	150	160	WASTE	FALSE	Upper Dwd	<0.6	0.0	#N/A	0.0	6.64	0.13	0.12	<0.02	0.002
W21R-4859	36277	170	180	WASTE	TRUE	Upper Dwd	4.4	0.0	#N/A	-4.4	6.31	0.98	0.84	0.14	0.004
W21R-4859	36278	180	190	WASTE	TRUE	Upper Dwd	6.9	0.0	#N/A	-6.9	6.32	0.87	0.65	0.22	0.003
W21R-4860	36321	200	210	WASTE	FALSE	Upper Dwd	1.3	0.5	0.4	-0.8	7.34	0.13	0.09	0.04	0.003
W21R-4860	36322	210	220	WASTE	FALSE	Upper Dwd	1.6	0.5	0.3	-1.1	7.08	0.24	0.19	0.05	—
W21R-4861	36368	200	210	WASTE	TRUE	Upper Dwd	9.1	0.7	<0.1	-8.4	6.09	0.75	0.46	0.29	0.003
W21R-4863	36499	120	130	WASTE	FALSE	Upper Dwd	<0.6	0.7	#N/A	0.7	7.62	0.02	0.02	<0.02	0.002
W21R-4863	36514	250	260	ORE	FALSE	Upper Dwd	<0.6	7.7	#N/A	7.7	7.77	0.37	0.44	<0.02	0.054
W21R-4863	36518	290	300	ORE	FALSE	Upper Dwd	<0.6	0.3	#N/A	0.3	7.67	0.23	0.22	<0.02	0.107
W21R-4821	33957	120	130	WASTE	FALSE	Upper Dwd	<0.6	237.0	#N/A	237.0	8.75	<0.02	0.01	<0.02	0.0007
W21R-4821	33961	160	170	WASTE	FALSE	Upper Dwd	<0.6	233.0	#N/A	233.0	8.55	<0.02	0.01	<0.02	0.0003
W21R-4822	34043	40	50	WASTE	FALSE	Upper Dwd	<0.6	4.2	#N/A	4.2	7.52	<0.02	0.01	<0.02	0.0003
W21R-4822	34047	80	90	WASTE	FALSE	Upper Dwd	<0.6	2.8	#N/A	2.8	7.87	<0.02	<0.01	<0.02	0.0002
W21R-4824	34249	200	210	WASTE	FALSE	Upper Dwd	<0.6	118.0	#N/A	118.0	8.28	<0.02	0.01	<0.02	0.0025
W21R-4824	34253	240	250	ORE	FALSE	Upper Dwd	<0.6	127.0	#N/A	127.0	8.40	<0.02	0.01	<0.02	0.035
W21R-4824	34257	280	290	WASTE	FALSE	Upper Dwd	<0.6	270.0	#N/A	270.0	8.76	<0.02	0.01	<0.02	0.0037

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 11 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4824	34261	320	330	WASTE	FALSE	Upper Dwd	<0.6	395.0	#N/A	395.0	8.73	<0.02	0.01	<0.02	0.0009
W21R-4825	34341	180	190	ORE	FALSE	Upper Dwd	<0.6	146.0	#N/A	146.0	8.43	<0.02	0.01	<0.02	0.0401
W21R-4825	34345	220	230	WASTE	FALSE	Upper Dwd	<0.6	225.0	#N/A	225.0	8.46	<0.02	<0.01	<0.02	0.0008
W21R-4826	34434	170	180	ORE	FALSE	Upper Dwd	<0.6	1.7	#N/A	1.7	7.74	0.11	0.12	<0.02	0.3
W21R-4826	34438	210	220	ORE	FALSE	Upper Dwd	<0.6	0.2	#N/A	0.2	7.87	<0.02	0.02	<0.02	0.0308
W21R-4826	34442	250	260	WASTE	FALSE	Upper Dwd	<0.6	197.0	#N/A	197.0	8.58	<0.02	0.01	<0.02	0.011
W21R-4826	34446	290	300	WASTE	FALSE	Upper Dwd	<0.6	187.0	#N/A	187.0	8.52	<0.02	0.01	<0.02	0.0038
W21R-4827	34521	120	130	ORE	FALSE	Upper Dwd	<0.6	25.4	#N/A	25.4	8.49	0.03	0.03	<0.02	0.2227
W21R-4827	34525	160	170	ORE	FALSE	Upper Dwd	<0.6	197.0	#N/A	197.0	8.88	<0.02	0.01	<0.02	0.036
W21R-4819	34873	160	170	ORE	FALSE	Upper Dwd	1.6	3.8	2.4	2.2	7.23	0.43	0.38	0.05	0.1083
W21R-4819	34879	200	210	ORE	FALSE	Upper Dwd	1.3	20.9	16.1	19.6	8.43	0.19	0.15	0.04	0.1097
W21R-4856	36073	10	20	WASTE	FALSE	Upper Dwd	<0.6	80.0	#N/A	80.0	8.06	0.05	0.06	<0.02	0.0007
W21R-4856	36077	50	60	WASTE	FALSE	Upper Dwd	<0.6	86.3	#N/A	86.3	8.26	<0.02	0.02	<0.02	0.0011
W21R-4856	36081	90	100	ORE	FALSE	Upper Dwd	<0.6	4.2	#N/A	4.2	8.51	0.17	0.18	<0.02	0.0223
W21R-4856	36085	130	140	WASTE	FALSE	Upper Dwd	<0.6	322.0	#N/A	322.0	8.56	<0.02	0.01	<0.02	0.0002
W21R-4856	36091	170	180	ORE	FALSE	Upper Dwd	<0.6	124.0	#N/A	124.0	8.58	<0.02	0.01	<0.02	0.0429
W21R-4857	36124	20	30	WASTE	FALSE	Upper Dwd	<0.6	275.0	#N/A	275.0	8.32	<0.02	0.01	<0.02	0.0001
W21R-4857	36128	60	70	WASTE	FALSE	Upper Dwd	<0.6	104.0	#N/A	104.0	8.41	<0.02	<0.01	<0.02	0.0013
W21R-4857	36136	140	150	WASTE	FALSE	Upper Dwd	1.9	336.0	177.0	334.0	8.71	0.07	0.01	0.06	0.00005
W21R-4860	36321	200	210	WASTE	FALSE	Upper Dwd	1.3	0.5	0.4	-0.8	7.34	0.13	0.09	0.04	0.0019
W21R-4860	36322	210	220	WASTE	FALSE	Upper Dwd	1.6	0.5	0.3	-1.1	7.08	0.24	0.19	0.05	0.0006
W21R-4860	36323	220	230	WASTE	FALSE	Upper Dwd	<0.6	1.5	#N/A	1.5	7.51	0.05	0.04	<0.02	0.0012
W21R-4860	36324	230	240	WASTE	FALSE	Upper Dwd	<0.6	0.2	#N/A	0.2	7.36	<0.02	0.01	<0.02	0.0016
W21R-4860	36325	240	250	WASTE	FALSE	Upper Dwd	<0.6	0.5	#N/A	0.5	7.36	0.17	0.18	<0.02	0.0004
W21R-4860	36326	250	260	WASTE	FALSE	Upper Dwd	0.6	1.2	2.0	0.6	7.08	0.27	0.23	0.02	0.0007
W21R-4860	36327	260	270	WASTE	FALSE	Upper Dwd	<0.6	1.3	#N/A	1.3	7.05	0.43	0.40	<0.02	0.0015
W21R-4862	36396	30	40	WASTE	FALSE	Upper Dwd	<0.6	4.5	#N/A	4.5	7.47	<0.02	0.01	<0.02	0.0009
W21R-4862	36400	70	80	ORE	FALSE	Upper Dwd	<0.6	9.9	#N/A	9.9	8.00	0.02	0.03	<0.02	0.049
W21R-4862	36404	110	120	WASTE	FALSE	Upper Dwd	<0.6	183.0	#N/A	183.0	8.46	0.02	0.02	<0.02	0.0051
W21R-4864	36545	120	130	ORE	FALSE	Upper Dwd	<0.6	1.0	#N/A	1.0	7.54	0.05	0.06	<0.02	0.0654
W21R-4864	36545	120	130	ORE	FALSE	Upper Dwd	<0.6	1.0	#N/A	1.0	7.54	0.05	0.06	<0.02	0.0654
W21R-4865	36561	20	30	WASTE	FALSE	Upper Dwd	<0.6	1.7	#N/A	1.7	6.56	0.16	0.16	<0.02	0.0003
W21R-4865	36565	60	70	WASTE	FALSE	Upper Dwd	<0.6	2.3	#N/A	2.3	7.82	0.05	0.04	<0.02	0.0006
W21R-4865	36569	100	110	WASTE	FALSE	Upper Dwd	<0.6	205.0	#N/A	205.0	8.92	<0.02	0.01	<0.02	0.0007

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 12 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4865	36573	140	150	WASTE	FALSE	Upper Dwd	<0.6	198.0	#N/A	198.0	8.75	<0.02	0.01	<0.02	0.0004
W21R-4865	36579	180	190	WASTE	FALSE	Upper Dwd	<0.6	228.0	#N/A	228.0	8.76	0.02	0.01	<0.02	0.00005
W21R-4866	36662	90	100	WASTE	FALSE	Upper Dwd	<0.6	5.3	#N/A	5.3	8.30	0.03	0.02	<0.02	0.0007
W21R-4866	36666	130	140	WASTE	FALSE	Upper Dwd	<0.6	99.7	#N/A	99.7	8.25	0.05	0.05	<0.02	0.0046
W21R-4866	36672	170	180	WASTE	FALSE	Upper Dwd	<0.6	203.0	#N/A	203.0	8.55	<0.02	0.01	<0.02	0.0003
W21R-4866	36676	210	220	WASTE	FALSE	Upper Dwd	<0.6	213.0	#N/A	213.0	8.28	0.22	0.26	<0.02	0.0004
W21R-4867	36755	80	90	WASTE	FALSE	Upper Dwd	<0.6	0.3	#N/A	0.3	7.75	0.03	0.02	<0.02	0.00005
W21R-4867	36755	80	90	WASTE	FALSE	Upper Dwd	<0.6	0.3	#N/A	0.3	7.75	0.03	0.02	<0.02	0.00005
W21R-4867	36759	120	130	WASTE	FALSE	Upper Dwd	<0.6	127.0	#N/A	127.0	8.38	0.10	0.14	<0.02	0.0006
W21R-4867	36759	120	130	WASTE	FALSE	Upper Dwd	<0.6	127.0	#N/A	127.0	8.38	0.10	0.14	<0.02	0.0006
W21R-4867	36763	160	170	WASTE	FALSE	Upper Dwd	<0.6	208.0	#N/A	208.0	8.55	<0.02	0.01	<0.02	0.00005
W21R-4867	36763	160	170	WASTE	FALSE	Upper Dwd	<0.6	208.0	#N/A	208.0	8.55	<0.02	0.01	<0.02	0.00005
W21R-4867	36769	200	210	WASTE	FALSE	Upper Dwd	<0.6	152.0	#N/A	152.0	8.52	0.11	0.13	<0.02	0.0003
W21R-4867	36769	200	210	WASTE	FALSE	Upper Dwd	<0.6	152.0	#N/A	152.0	8.52	0.11	0.13	<0.02	0.0003
W21R-4868	36835	110	120	WASTE	FALSE	Upper Dwd	0.6	390.0	649.3	389.0	8.79	0.03	0.01	0.02	0.0002
W21R-4868	36839	150	160	WASTE	FALSE	Upper Dwd	<0.6	297.0	#N/A	297.0	8.87	<0.02	0.01	<0.02	0.00005
W21R-4868	36845	190	200	WASTE	FALSE	Upper Dwd	<0.6	324.0	#N/A	324.0	8.88	<0.02	0.01	<0.02	0.0002
W21R-4871	37120	170	180	WASTE	TRUE	Upper Dwd	<0.6	88.5	#N/A	88.5	8.33	0.03	0.02	<0.02	0.0086
W21R-4871	37124	210	220	WASTE	TRUE	Upper Dwd	1.6	244.0	152.4	242.0	8.74	0.06	0.01	0.05	0.0011
W21R-4871	37128	250	260	WASTE	TRUE	Upper Dwd	<0.6	251.0	#N/A	251.0	8.88	<0.02	0.01	<0.02	0.00005
W21R-4873	37302	190	200	ORE	TRUE	Upper Dwd	2.8	19.3	6.9	16.5	7.91	0.33	0.24	0.09	0.07
W21R-4873	37306	230	240	WASTE	TRUE	Upper Dwd	<0.6	207.0	#N/A	207.0	8.76	<0.02	0.01	<0.02	0.0013
W21R-4873	37310	270	280	ORE	FALSE	Upper Dwd	<0.6	164.0	#N/A	164.0	8.54	0.03	0.03	<0.02	0.0569
W21R-4876	37482	200	210	WASTE	TRUE	Upper Dwd	<0.6	348.0	#N/A	348.0	8.87	0.02	0.02	<0.02	0.0004
W21R-4876	37486	240	250	WASTE	FALSE	Upper Dwd	<0.6	212.0	#N/A	212.0	8.66	<0.02	0.01	<0.02	0.00005
W21R-4877	37509	170	180	ORE	TRUE	Upper Dwd	<0.6	102.0	#N/A	102.0	8.61	0.10	0.09	<0.02	0.0739
W21R-4878	37522	60	70	WASTE	TRUE	Upper Dwd	<0.6	249.0	#N/A	249.0	8.91	<0.02	0.01	<0.02	0.0016
W21R-4878	37526	100	110	WASTE	TRUE	Upper Dwd	<0.6	213.0	#N/A	213.0	8.98	<0.02	0.01	<0.02	0.0004
W21R-4879	37595	70	80	ORE	TRUE	Upper Dwd	<0.6	137.0	#N/A	137.0	8.70	0.03	0.03	<0.02	0.033
W21R-4882	37761	130	140	WASTE	TRUE	Upper Dwd	<0.6	303.0	#N/A	303.0	7.36	0.02	0.02	<0.02	0.0029
W21R-4882	37767	170	180	WASTE	TRUE	Upper Dwd	<0.6	210.0	#N/A	210.0	8.58	<0.02	0.01	<0.02	0.0004
W21R-4882	37771	210	220	WASTE	TRUE	Upper Dwd	<0.6	317.0	#N/A	317.0	8.85	<0.02	0.01	<0.02	0.0007
W21R-4883	37797	130	140	WASTE	FALSE	Upper Dwd	<0.6	6.9	#N/A	6.9	7.88	0.24	0.28	<0.02	0.0107

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 13 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4883	37803	170	180	WASTE	FALSE	Upper Dwd	<0.6	8.2	#N/A	8.2	7.90	0.05	0.06	<0.02	0.0026
W21R-4883	37807	210	220	WASTE	FALSE	Upper Dwd	<0.6	196.0	#N/A	196.0	8.43	0.02	0.01	<0.02	0.0004
W21R-4883	37811	250	260	WASTE	FALSE	Upper Dwd	<0.6	202.0	#N/A	202.0	8.72	<0.02	0.01	<0.02	0.0003
W21R-4884	37876	230	240	WASTE	TRUE	Upper Dwd	<0.6	126.0	#N/A	126.0	8.53	<0.02	0.01	<0.02	0.0018
W21R-4884	37880	270	280	WASTE	TRUE	Upper Dwd	<0.6	185.0	#N/A	185.0	8.67	<0.02	0.01	<0.02	0.0011
W21R-4884	37884	310	320	WASTE	FALSE	Upper Dwd	<0.6	265.0	#N/A	265.0	8.68	<0.02	0.01	<0.02	0.0007
W21R-4885	37962	220	230	WASTE	TRUE	Upper Dwd	<0.6	336.0	#N/A	336.0	8.55	<0.02	0.01	<0.02	0.0003
W21R-4885	37966	260	270	WASTE	TRUE	Upper Dwd	<0.6	150.0	#N/A	150.0	8.32	<0.02	0.01	<0.02	0.0021
W21R-4885	37970	300	310	WASTE	TRUE	Upper Dwd	<0.6	194.0	#N/A	194.0	8.43	<0.02	<0.01	<0.02	0.0003
W21R-4886	37982	70	80	ORE	TRUE	Upper Dwd	<0.6	114.0	#N/A	114.0	8.68	0.29	0.30	<0.02	0.0944
W21R-4886	37982	70	80	ORE	TRUE	Upper Dwd	<0.6	114.0	#N/A	114.0	8.68	0.29	0.30	<0.02	0.0944
W21R-4886	37986	110	120	WASTE	TRUE	Upper Dwd	<0.6	148.0	#N/A	148.0	8.55	<0.02	0.01	<0.02	0.0002
W21R-4886	37986	110	120	WASTE	TRUE	Upper Dwd	<0.6	148.0	#N/A	148.0	8.55	<0.02	0.01	<0.02	0.0002
W21R-4886	37990	150	160	WASTE	TRUE	Upper Dwd	<0.6	269.0	#N/A	269.0	8.84	<0.02	0.04	<0.02	0.0028
W21R-4886	37990	150	160	WASTE	TRUE	Upper Dwd	<0.6	269.0	#N/A	269.0	8.84	<0.02	0.04	<0.02	0.0028
W21R-4890	38059	80	90	ORE	TRUE	Upper Dwd	0.6	141.0	235.5	141.0	8.53	0.10	0.08	0.02	0.348
W21R-4890	38063	120	130	ORE	TRUE	Upper Dwd	<0.6	149.0	#N/A	149.0	8.70	0.02	0.01	<0.02	0.0261
W21R-4890	38067	160	170	ORE	TRUE	Upper Dwd	<0.6	234.0	#N/A	234.0	8.72	0.02	0.01	<0.02	0.0281
W21R-4890	38073	200	210	WASTE	FALSE	Upper Dwd	<0.6	262.0	#N/A	262.0	8.55	<0.02	0.01	<0.02	0.0012
W21R-4887	38086	50	60	ORE	TRUE	Upper Dwd	<0.6	3.3	#N/A	3.3	7.68	0.19	0.21	<0.02	0.013
W21R-4887	38090	90	100	WASTE	TRUE	Upper Dwd	<0.6	135.0	#N/A	135.0	8.57	<0.02	0.01	<0.02	0.001
W21R-4887	38094	130	140	WASTE	TRUE	Upper Dwd	<0.6	208.0	#N/A	208.0	8.58	<0.02	<0.01	<0.02	0.0002
W21R-4887	38100	170	180	WASTE	TRUE	Upper Dwd	<0.6	165.0	#N/A	165.0	8.32	0.79	0.87	<0.02	0.0056
W21R-4888	38172	60	70	WASTE	TRUE	Upper Dwd	<0.6	2.5	#N/A	2.5	7.71	0.18	0.22	<0.02	0.0108
W21R-4888	38176	100	110	WASTE	TRUE	Upper Dwd	<0.6	173.0	#N/A	173.0	8.60	0.03	0.03	<0.02	0.0025
W21R-4888	38180	140	150	WASTE	TRUE	Upper Dwd	<0.6	302.0	#N/A	302.0	8.81	<0.02	0.02	<0.02	0.0003
W21R-4891	38304	320	330	WASTE	FALSE	Upper Dwd	<0.6	129.0	#N/A	129.0	8.46	<0.02	0.01	<0.02	0.0013
W21R-4891	38313	360	370	WASTE	FALSE	Upper Dwd	<0.6	255.0	#N/A	255.0	8.62	<0.02	0.01	<0.02	0.0024
W21R-4892	38387	210	220	WASTE	FALSE	Upper Dwd	<0.6	263.0	#N/A	263.0	8.60	<0.02	<0.01	<0.02	0.0004
W21R-4892	38391	250	260	WASTE	FALSE	Upper Dwd	<0.6	246.0	#N/A	246.0	8.82	<0.02	0.01	<0.02	0.00005
W21R-4892	38395	290	300	WASTE	FALSE	Upper Dwd	<0.6	286.0	#N/A	286.0	8.71	<0.02	0.01	<0.02	0.00005
W21R-4893	38477	220	230	ORE	FALSE	Upper Dwd	<0.6	12.3	#N/A	12.3	8.36	0.10	0.09	<0.02	0.0857
W21R-4893	38481	260	270	WASTE	FALSE	Upper Dwd	<0.6	155.0	#N/A	155.0	8.73	<0.02	0.01	<0.02	0.0093

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 14 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4893	38485	300	310	WASTE	FALSE	Upper Dwd	4.1	363.0	88.6	359.0	8.87	0.14	0.01	0.13	0.0005
W21R-4893	38491	340	350	WASTE	FALSE	Upper Dwd	<0.6	274.0	#N/A	274.0	8.92	<0.02	0.01	<0.02	0.001
W21R-4894	38572	230	240	ORE	FALSE	Upper Dwd	<0.6	112.0	#N/A	112.0	8.47	<0.02	0.01	<0.02	0.0143
W21R-4894	38572	230	240	ORE	FALSE	Upper Dwd	<0.6	112.0	#N/A	112.0	8.47	<0.02	0.01	<0.02	0.0143
W21R-4894	38576	270	280	WASTE	FALSE	Upper Dwd	<0.6	181.0	#N/A	181.0	8.55	<0.02	0.01	<0.02	0.0019
W21R-4894	38576	270	280	WASTE	FALSE	Upper Dwd	<0.6	181.0	#N/A	181.0	8.55	<0.02	0.01	<0.02	0.0019
W21R-4894	38580	310	320	WASTE	FALSE	Upper Dwd	<0.6	267.0	#N/A	267.0	8.76	<0.02	0.01	<0.02	0.0001
W21R-4894	38580	310	320	WASTE	FALSE	Upper Dwd	<0.6	267.0	#N/A	267.0	8.76	<0.02	0.01	<0.02	0.0001
W21R-4894	38589	350	360	WASTE	FALSE	Upper Dwd	<0.6	416.0	#N/A	416.0	8.87	<0.02	0.01	<0.02	0.00005
W21R-4894	38589	350	360	WASTE	FALSE	Upper Dwd	<0.6	416.0	#N/A	416.0	8.87	<0.02	0.01	<0.02	0.00005
W21R-4896	38713	160	170	ORE	FALSE	Upper Dwd	0.6	33.0	55.0	32.4	8.45	0.12	0.10	0.02	0.0612
W21R-4896	38719	200	210	WASTE	FALSE	Upper Dwd	<0.6	3.7	#N/A	3.7	8.15	<0.02	0.01	<0.02	0.0024
W21R-4896	38723	240	250	WASTE	FALSE	Upper Dwd	<0.6	179.0	#N/A	179.0	8.21	<0.02	0.01	<0.02	0.0042
W21R-4897	38803	120	130	ORE	FALSE	Upper Dwd	<0.6	1.5	#N/A	1.5	7.45	0.05	0.04	<0.02	0.015
W21R-4897	38807	160	170	WASTE	FALSE	Upper Dwd	<0.6	116.0	#N/A	116.0	8.23	<0.02	0.01	<0.02	0
W21R-4897	38813	200	210	ORE	FALSE	Upper Dwd	<0.6	2.2	#N/A	2.2	7.53	0.72	0.80	<0.02	0.068
W21R-4897	38817	240	250	WASTE	FALSE	Upper Dwd	<0.6	152.0	#N/A	152.0	8.35	<0.02	0.01	<0.02	0
W21R-4897	38821	280	290	WASTE	FALSE	Upper Dwd	<0.6	276.0	#N/A	276.0	8.31	<0.02	0.01	<0.02	0
W21R-4897	38825	320	330	WASTE	FALSE	Upper Dwd	<0.6	24.0	#N/A	24.0	8.29	<0.02	0.01	<0.02	0.006
W21R-4898	38905	180	190	ORE	FALSE	Upper Dwd	<0.6	44.7	#N/A	44.7	8.17	0.02	0.01	<0.02	0.0529
W21R-4898	38909	220	230	WASTE	FALSE	Upper Dwd	<0.6	38.1	#N/A	38.1	8.31	<0.02	<0.01	<0.02	0.0039
W21R-4898	38913	260	270	WASTE	FALSE	Upper Dwd	<0.6	179.0	#N/A	179.0	8.28	<0.02	<0.01	<0.02	0.004
W21R-4900	39074	210	220	WASTE	FALSE	Upper Dwd	<0.6	11.4	#N/A	11.4	8.04	<0.02	0.01	<0.02	0.0007
W21R-4900	39078	250	260	WASTE	FALSE	Upper Dwd	<0.6	2.8	#N/A	2.8	8.01	<0.02	0.01	<0.02	0.0059
W21R-4901	39159	140	150	WASTE	FALSE	Upper Dwd	<0.6	0.8	#N/A	0.8	8.09	0.02	0.03	<0.02	0.0034
W21R-4901	39165	180	190	ORE	FALSE	Upper Dwd	0.9	1.0	1.1	0.1	7.83	0.04	0.01	0.03	0.1053
W21R-4901	39169	220	230	WASTE	FALSE	Upper Dwd	<0.6	37.8	#N/A	37.8	8.40	<0.02	0.02	<0.02	0.0007
W21R-4901	39173	260	270	WASTE	FALSE	Upper Dwd	<0.6	132.0	#N/A	132.0	8.42	<0.02	<0.01	<0.02	0.0005
W21R-4902	39202	70	80	WASTE	FALSE	Upper Dwd	<0.6	0.8	#N/A	0.8	8.42	<0.02	0.05	<0.02	0.0009
W21R-4902	39206	110	120	ORE	FALSE	Upper Dwd	<0.6	1.0	#N/A	1.0	8.43	<0.02	0.01	<0.02	0.0277
W21R-4902	39210	150	160	ORE	FALSE	Upper Dwd	0.9	5.7	6.3	4.8	8.36	0.04	0.01	0.03	0.0541
W21R-4903	39308	170	180	WASTE	FALSE	Upper Dwd	<0.6	6.1	#N/A	6.1	8.18	0.04	0.03	<0.02	0.0066
W21R-4903	39312	210	220	WASTE	FALSE	Upper Dwd	<0.6	278.0	#N/A	278.0	8.85	<0.02	0.01	<0.02	0.0001

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 15 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4903	39316	250	260	WASTE	FALSE	Upper Dwd	<0.6	237.0	#N/A	237.0	8.91	<0.02	0.01	<0.02	0.0001
W21R-4904	39338	80	90	WASTE	FALSE	Upper Dwd	<0.6	316.0	#N/A	316.0	8.82	<0.02	0.01	<0.02	0.0013
W21R-4904	39342	120	130	WASTE	FALSE	Upper Dwd	<0.6	235.0	#N/A	235.0	8.99	<0.02	0.01	<0.02	0.00005
W21R-4904	39346	160	170	WASTE	FALSE	Upper Dwd	<0.6	328.0	#N/A	328.0	8.85	<0.02	0.01	<0.02	0.00005
W21R-4904	39352	200	210	ORE	FALSE	Upper Dwd	<0.6	54.0	#N/A	54.0	7.97	0.02	0.03	<0.02	0.0153
W21R-4905	39391	170	180	WASTE	FALSE	Upper Dwd	<0.6	409.0	#N/A	409.0	8.61	<0.02	0.01	<0.02	0.0005
W21R-4905	39395	210	220	WASTE	FALSE	Upper Dwd	<0.6	225.0	#N/A	225.0	8.56	<0.02	0.01	<0.02	0.0001
W21R-4905	39399	250	260	WASTE	FALSE	Upper Dwd	<0.6	303.0	#N/A	303.0	8.85	<0.02	0.01	<0.02	0.0001
W21R-4907	39486	180	190	WASTE	FALSE	Upper Dwd	<0.6	394.0	#N/A	394.0	8.81	<0.02	<0.01	<0.02	0.0004
W21R-4907	39490	220	230	WASTE	FALSE	Upper Dwd	<0.6	152.0	#N/A	152.0	8.57	<0.02	<0.01	<0.02	0.0093
W21R-4907	39494	260	270	WASTE	FALSE	Upper Dwd	<0.6	271.0	#N/A	271.0	9.08	<0.02	0.01	<0.02	0.0002
W21R-4907	39498	300	310	WASTE	FALSE	Upper Dwd	<0.6	426.0	#N/A	426.0	9.01	<0.02	0.01	<0.02	0.0003
W21R-4908	39569	160	170	WASTE	FALSE	Upper Dwd	<0.6	79.6	#N/A	79.6	8.70	<0.02	<0.01	<0.02	0.0021
W21R-4908	39575	200	210	WASTE	FALSE	Upper Dwd	<0.6	322.0	#N/A	322.0	9.06	<0.02	0.01	<0.02	0.00005
W21R-4908	39579	240	250	WASTE	FALSE	Upper Dwd	<0.6	185.0	#N/A	185.0	8.94	<0.02	<0.01	<0.02	0.0002
W21R-4908	39583	280	290	WASTE	FALSE	Upper Dwd	<0.6	326.0	#N/A	326.0	8.99	<0.02	0.01	<0.02	0.00005
W21R-4909	39670	210	220	WASTE	FALSE	Upper Dwd	<0.6	107.0	#N/A	107.0	8.37	<0.02	0.01	<0.02	0.0005
W21R-4909	39674	250	260	WASTE	FALSE	Upper Dwd	<0.6	233.0	#N/A	233.0	8.61	<0.02	0.01	<0.02	0.0004
W21R-4909	39678	290	300	WASTE	FALSE	Upper Dwd	1.6	347.0	216.6	345.0	8.85	0.06	0.01	0.05	0.0003
W21R-4909	39682	330	340	WASTE	FALSE	Upper Dwd	3.1	339.0	109.3	336.0	8.86	0.11	0.01	0.10	0.0002
W21R-4911	39851	160	170	WASTE	FALSE	Upper Dwd	<0.6	321.0	#N/A	321.0	8.80	<0.02	0.01	<0.02	0.00005
W21R-4911	39855	180	190	ORE	FALSE	Upper Dwd	<0.6	286.0	#N/A	286.0	8.99	0.02	0.02	<0.02	0.1017
W21R-4911	39857	200	210	WASTE	FALSE	Upper Dwd	<0.6	159.0	#N/A	159.0	8.98	<0.02	0.01	<0.02	0.0047
W21R-4911	39861	240	250	WASTE	FALSE	Upper Dwd	<0.6	324.0	#N/A	324.0	8.96	<0.02	0.01	<0.02	0.0006
W21R-4912	39948	170	180	WASTE	FALSE	Upper Dwd	<0.6	395.0	#N/A	395.0	9.02	<0.02	0.01	<0.02	0
W21R-4912	39952	210	220	WASTE	FALSE	Upper Dwd	<0.6	210.0	#N/A	210.0	8.89	<0.02	0.01	<0.02	0
W21R-4912	39956	250	260	WASTE	FALSE	Upper Dwd	<0.6	300.0	#N/A	300.0	9.02	<0.02	0.01	<0.02	0
W21R-4913	39991	140	150	ORE	FALSE	Upper Dwd	<0.6	37.5	#N/A	37.5	8.51	0.02	0.01	<0.02	0.0221
W21R-4913	39997	180	190	WASTE	FALSE	Upper Dwd	<0.6	154.0	#N/A	154.0	8.94	<0.02	0.01	<0.02	0.001
W21R-4913	40001	220	230	WASTE	FALSE	Upper Dwd	<0.6	311.0	#N/A	311.0	9.13	<0.02	0.01	<0.02	0.0003
W21R-4914	40083	120	130	WASTE	FALSE	Upper Dwd	<0.6	304.0	#N/A	304.0	8.40	<0.02	0.01	<0.02	0.0003
W21R-4914	40087	160	170	WASTE	FALSE	Upper Dwd	<0.6	220.0	#N/A	220.0	8.81	<0.02	0.01	<0.02	0.0008
W21R-4914	40093	200	210	WASTE	FALSE	Upper Dwd	<0.6	178.0	#N/A	178.0	8.30	<0.02	0.01	<0.02	0.0012
W21R-4919	40509	120	130	WASTE	FALSE	Upper Dwd	<0.6	488.0	#N/A	488.0	9.24	<0.02	0.01	<0.02	0.0001

Table D-2B. Acid Base Accounting for Upper Deadwood (Current Data) (Page 16 of 16)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade Opt
W21R-4919	40513	160	170	WASTE	FALSE	Upper Dwd	<0.6	243.0	#N/A	243.0	8.87	<0.02	0.01	<0.02	0.0019
W21R-4919	40519	200	210	ORE	FALSE	Upper Dwd	<0.6	224.0	#N/A	224.0	8.89	0.02	0.01	<0.02	0.1098



Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 1 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3074	13258	70	80	ORE	YES	Intermediate Dwd	17.2	1	0.1	-16	5.5	0.55	0	0	0	0	0.013
FX3074	13260	90	100	WASTE	YES	Intermediate Dwd	26.9	1	0	-26	5.5	0.86	0	0	0	0	0.01
FX3074	13261	100	110	ORE	YES	Intermediate Dwd	36.6	1	0	-36	5.4	1.17	0	0	0	0	0.059
FX3075	13297	180	190	ORE	YES	Intermediate Dwd	21.9	1	0	-21	6.1	0.7	0	0	0	0	0.043
FX3075	13299	200	210	ORE	YES	Intermediate Dwd	13.8	2	0.1	-12	6.5	0.44	0	0	0	0	0.077
FX3075	13301	220	230	ORE	NO	Intermediate Dwd	17.8	1	0.1	-17	6.4	0.57	0	0	0	0	0.1
FX3072	13322	150	160	ORE	YES	Intermediate Dwd	10.6	8	0.8	-3	7.5	0.34	0	0	0	0	0.024
FX3072	13323	160	170	ORE	YES	Intermediate Dwd	1.6	11	6.9	9	7.2	0.05	0	0	0	0	0.021
FX3083	14390	180	190	ORE	YES	Intermediate Dwd	4.7	1	0.2	-4	6.1	0.15	0	0	0	0	0.016
FX3084	14419	170	180	ORE	YES	Intermediate Dwd	13.8	0	0	-14	6.1	0.44	0	0	0	0	0.022
FX3085	14460	260	270	ORE	YES	Intermediate Dwd	30	0	0	-30	5.9	0.96	0	0	0	0	0.012
FX3085	14461	270	280	ORE	NO	Intermediate Dwd	7.8	0	0	-8	6.5	0.25	0	0	0	0	0.044
FX3085	14464	300	310	ORE	NO	Intermediate Dwd	10	1	0.1	-9	7	0.32	0	0	0	0	0.045
FX3087	14582	240	250	ORE	YES	Intermediate Dwd	2.2	0	0	-2	6.1	0.07	0	0	0	0	0.027
FX3087	14585	270	280	ORE	NO	Intermediate Dwd	15.9	7	0.4	-9	6.7	0.51	0	0	0	0	0.038
FX3088	14609	190	200	WASTE	YES	Intermediate Dwd	27.8	0	0	-28	5.5	0.89	0	0	0	0	—
FX3088	14613	230	240	WASTE	YES	Intermediate Dwd	13.8	1	0.1	-13	6.5	0.44	0	0	0	0	0.01
FX3076	14629	70	80	ORE	YES	Intermediate Dwd	5.3	3	0.6	-2	7.6	0.17	0	0	0	0	0.015
FX3076	14632	100	110	ORE	YES	Intermediate Dwd	4.1	4	1	0	6.8	0.13	0	0	0	0	0.076
FX3076	14638	160	170	ORE	YES	Intermediate Dwd	0.3	9	30	9	6.9	0.01	0	0	0	0	0.017
FX3078	14692	140	150	ORE	YES	Intermediate Dwd	34.4	0	0	-34	5.8	1.1	0	0	0	0	0.101
FX3078	14693	150	160	ORE	YES	Intermediate Dwd	44.4	1	0	-43	5.7	1.42	0	0	0	0	0.033
FX3078	14696	180	190	ORE	YES	Intermediate Dwd	6.3	3	0.5	-3	6.5	0.2	0	0	0	0	0.025
FX3079	14721	130	140	ORE	YES	Intermediate Dwd	0.3	1	3.3	1	7	0.01	0	0	0	0	0.012
FX3079	14728	200	210	ORE	YES	Intermediate Dwd	8.4	2	0.2	-6	6.1	0.27	0	0	0	0	0.019
FX3079	14729	210	220	ORE	YES	Intermediate Dwd	59.4	-1	0	-60	4.1	1.9	0	0	0	0	0.046
FX3064	14745	70	80	ORE	YES	Intermediate Dwd	—	—	—	—	—	0.55	0	0	0	0	0.024
FX3064	14746	80	90	ORE	YES	Intermediate Dwd	9.4	6	0.6	-3	—	0.3	0	0	0	0	0.047
FX3064	14748	100	110	WASTE	YES	Intermediate Dwd	9.1	4	0.4	-5	6.4	0.29	0	0	0	0	—
FX3066	14810	120	130	ORE	YES	Intermediate Dwd	3.1	1	0.3	-2	6	0.1	0	0	0	0	0.014
FX3066	14816	180	190	ORE	YES	Intermediate Dwd	18.1	6	0.3	-12	6.2	0.58	0	0	0	0	0.015
FX3066	14817	190	200	ORE	YES	Intermediate Dwd	20.6	4	0.2	-17	6.2	0.66	0	0	0	0	0.022
FX3067	14840	120	130	ORE	YES	Intermediate Dwd	1.3	2	1.5	1	—	0.04	0	0	0	0	0.013
FX3067	14846	180	190	ORE	YES	Intermediate Dwd	38.4	0	0	-38	5.9	1.23	0	0	0	0	0.019

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 2 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3067	14850	220	230	ORE	NO	Intermediate Dwd	25.6	1	0	-25	6	0.82	0	0	0	0	0.184
FX3068	14876	180	190	ORE	YES	Intermediate Dwd	21.3	2	0.1	-19	5.3	0.68	0	0	0	0	0.013
FX3068	14879	210	220	ORE	NO	Intermediate Dwd	13.8	2	0.1	-12	6.1	0.44	0	0	0	0	0.11
FX3069	14897	90	100	WASTE	YES	Intermediate Dwd	19.1	1	0.1	-18	6.2	0.61	0	0	0	0	—
FX3069	14899	110	120	WASTE	YES	Intermediate Dwd	19.4	0	0	-19	5.6	0.62	0	0	0	0	—
FX3069	14906	180	190	ORE	YES	Intermediate Dwd	19.7	7	0.4	-13	6.7	0.63	0	0	0	0	0.025
FX3070	14935	190	200	ORE	YES	Intermediate Dwd	0.3	8	26.7	8	7.1	0.01	0	0	0	0	0.034
FX3070	14937	210	220	ORE	NO	Intermediate Dwd	15.3	3	0.2	-12	7	0.49	0	0	0	0	0.06
FX3070	14938	220	230	ORE	NO	Intermediate Dwd	18	1	0.1	-17	7	0.59	0	0	0	0	0.029
FX3071	14961	170	180	ORE	YES	Intermediate Dwd	19.4	4	0.2	-15	6.5	0.62	0	0	0	0	0.016
FX3071	14963	190	200	ORE	YES	Intermediate Dwd	29.7	3	0.1	-27	6.2	0.95	0	0	0	0	0.027
FX3346	49254	180	190	ORE	NO	Intermediate Dwd	3	7	2.3	5	0	0.1	0.02	-	0.07	0.01	0.113
FX3399	49339	230	240	WASTE	NO	Intermediate Dwd	0	25	25	25	8.3	0.01	—	—	—	—	—
FX3350	49513	170	180	ORE	YES	Intermediate Dwd	0	11	11	11	0	0.02	—	—	0.01	—	0.019
FX3351	49584	230	240	ORE	YES	Intermediate Dwd	10	17	1.7	7	0	0.37	0.05	0.03	0.29	—	0.301
FX3351	49585	240	250	ORE	YES	Intermediate Dwd	39	5	0.1	-34	0	1.4	0.15	0.01	0.96	0.28	0.172
FX3353	49705	130	140	ORE	YES	Intermediate Dwd	8	8	1	0	0	0.3	0.04	0.23	0.02	—	0.162
FX3354	49765	90	100	WASTE	NO	Intermediate Dwd	3	17	5.7	13	0	0.12	0.02	0.03	0.07	—	—
FX3404	49989	390	400	WASTE	NO	Intermediate Dwd	0	329	329	329	8	0.01	—	—	—	—	—
FX3357	50024	230	240	WASTE	YES	Intermediate Dwd	18	7	0.4	-11	0	0.71	0.15	-	0.55	0.02	-
FX3360	50218	220	230	WASTE	NO	Intermediate Dwd	0	197	197	197	0	0.01	—	—	—	—	—
FX3360	50250	540	550	WASTE	NO	Intermediate Dwd	8	311	38.9	303	0	0.27	—	—	0.23	0.04	—
FX3361	50266	50	60	ORE	YES	Intermediate Dwd	0	110	110	111	0	0.03	—	—	0.01	—	0.032
FX3361	50285	240	250	ORE	NO	Intermediate Dwd	1	44	44	43	0	0.05	—	—	0.03	—	0.058
FX3362	50361	350	360	ORE	YES	Intermediate Dwd	0	28	28	29	0	0.04	0.01	0.01	0.02	—	0.23
FX3397	50441	150	160	WASTE	YES	Intermediate Dwd	0	3	3	2	7.2	0.02	—	—	0.02	—	—
FX3396	50565	180	190	ORE	YES	Intermediate Dwd	1	200	200	199	7.9	0.05	—	—	0.04	—	0.012
FX3396	50576	290	300	WASTE	NO	Intermediate Dwd	0	299	299	298	7.9	0.03	—	—	0.02	—	—
FX3366	50618	320	330	ORE	NO	Intermediate Dwd	23	17	0.7	-5	7.6	0.81	0.08	0.07	0.63	0.02	0.202
FX3366	50620	340	350	ORE	NO	Intermediate Dwd	13	38	2.9	25	7.8	0.49	0.07	0.07	0.32	0.02	0.145
FX3381	50755	180	190	WASTE	YES	Intermediate Dwd	13	4	0.3	-9	5.3	0.45	0.05	—	0.38	0.03	-
FX3398	50778	210	220	ORE	YES	Intermediate Dwd	13	12	0.9	-1	7.6	0.47	0.06	—	0.41	-	0.058
FX3369	50801	200	210	WASTE	YES	Intermediate Dwd	0	86	86	86	8.5	0.02	—	—	—	—	—
FX3405	50818	140	150	WASTE	YES	Intermediate Dwd	0	38	38	38	8.1	0.01	—	—	—	—	—

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 3 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3396	50820	400	410	WASTE	NO	Intermediate Dwd	7	321	45.9	314	8	0.24	—	—	0.23	0.01	—
FX3374	51122	160	170	ORE	YES	Intermediate Dwd	5	172	34.4	167	7.6	0.16	0.01	0.02	0.12	—	0.045
FX3374	51133	270	280	WASTE	NO	Intermediate Dwd	0	366	366	366	8.2	0.01	—	0.01	—	—	—
FX3374	51145	390	400	WASTE	NO	Intermediate Dwd	8	327	40.9	319	7.7	0.27	—	—	0.26	—	—
FX3375	51188	170	180	ORE	YES	Intermediate Dwd	0	270	270	270	8.6	—	—	—	—	—	0.012
FX3375	51190	190	200	ORE	YES	Intermediate Dwd	0	138	138	139	7.9	0.02	—	—	—	—	0.02
FX3375	51210	390	400	WASTE	NO	Intermediate Dwd	10	251	25.1	240	7.7	0.34	—	—	0.31	0.02	—
FX3377	51312	110	120	WASTE	YES	Intermediate Dwd	0	222	222	222	8.1	—	—	—	—	—	—
FX3377	51322	210	220	WASTE	NO	Intermediate Dwd	7	12	1.7	4	8.2	0.26	0.03	—	0.2	0.02	—
FX3378	51383	170	180	ORE	NO	Intermediate Dwd	4	14	3.5	10	8.1	0.13	—	0.01	0.1	0.01	0.026
FX3380	51518	220	230	ORE	YES	Intermediate Dwd	1	28	28	27	8	0.05	—	—	0.03	—	0.088
FX3380	51522	260	270	ORE	YES	Intermediate Dwd	8	8	1	0	7.7	0.32	0.05	0.03	0.24	—	0.299
FX3382	51572	110	120	ORE	YES	Intermediate Dwd	2	10	5	8	7.6	0.07	0.02	—	0.04	—	0.015
FX3382	51581	200	210	WASTE	YES	Intermediate Dwd	3	131	43.7	127	7.8	0.12	—	0.01	0.1	—	—
FX3383	51630	190	200	WASTE	NO	Intermediate Dwd	3	183	61	181	8	0.09	—	—	0.08	—	—
FX3384	51677	160	170	WASTE	NO	Intermediate Dwd	2	278	139	276	8	0.07	—	—	0.06	—	—
FX3385	51724	130	140	WASTE	NO	Intermediate Dwd	3	366	122	363	7.9	0.1	—	—	0.08	—	—
FX3397	51995	370	380	WASTE	NO	Intermediate Dwd	8	242	30.3	234	8	0.25	—	—	0.24	0.01	—
FX3398	52092	310	320	ORE	NO	Intermediate Dwd	2	17	8.5	16	7.8	0.07	—	—	0.05	0.01	0.097
FX3409	52398	470	480	WASTE	NO	Intermediate Dwd	20	312	15.6	292	7.5	0.67	0.04	—	0.6	0.03	—
FX3410	52438	370	380	WASTE	NO	Intermediate Dwd	0	216	216	215	8.7	0.02	—	—	—	—	0.008
FX3410	52447	460	470	ORE	NO	Intermediate Dwd	0	57	57	56	8.5	0.02	—	—	—	—	0.038
FX3412	52536	350	360	WASTE	NO	Intermediate Dwd	0	296	296	297	8.4	0.01	—	—	—	—	—
FX3414	52631	300	310	ORE	NO	Intermediate Dwd	0	249	249	249	8.5	0.02	—	—	—	—	0.02
FX3416	52714	130	140	WASTE	YES	Intermediate Dwd	0	246	246	246	8.1	—	—	—	—	—	—
FX3416	52735	340	350	WASTE	NO	Intermediate Dwd	9	420	46.7	411	8.1	0.29	—	—	0.26	0.03	—
FX3417	52782	310	320	WASTE	NO	Intermediate Dwd	2	297	148.5	294	8.1	0.08	—	—	0.06	—	—
FX3418	52817	160	170	ORE	NO	Intermediate Dwd	13	22	1.7	9	7.8	0.48	0.06	0.04	0.33	0.06	0.099
FX3418	52828	270	280	WASTE	NO	Intermediate Dwd	0	341	341	341	8.2	0.01	—	—	—	—	—
FX3420	52936	350	360	WASTE	NO	Intermediate Dwd	3	257	85.7	255	8	0.09	—	—	0.08	—	—
FX3750	63165	240	250	WASTE	YES	Intermediate Dwd	4	261	65.3	257	7.9	0.16	0.03	—	0.12	0.01	—
FX3830	66248	320	330	WASTE	YES	Intermediate Dwd	—	372	0	372	8.6	0.02	—	0.02	—	—	—
FX3830	66252	360	370	WASTE	YES	Intermediate Dwd	2	221	0	218	8.5	0.08	—	—	0.07	—	—
FX3830	66260	440	450	WASTE	YES	Intermediate Dwd	—	199	0	198	8.6	0.03	—	—	0.02	—	—

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 4 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3830	66264	480	490	WASTE	YES	Intermediate Dwd	—	204	0	204	8.2	0.01	—	—	—	—	—
FX3830	66268	520	530	WASTE	YES	Intermediate Dwd	6	270	0	265	8.1	0.19	—	—	0.17	0.01	—
FX3830	66272	560	570	WASTE	NO	Intermediate Dwd	10	452	0	443	8	0.33	0.02	0.02	0.28	0.02	—
FX3831	66313	320	330	ORE	NO	Intermediate Dwd	—	174	0	174	8.9	0.01	-	0.01	—	—	0.012
FX3831	66321	400	410	WASTE	NO	Intermediate Dwd	2	232	0	230	8.8	0.07	—	—	0.06	—	—
FX3831	66325	440	450	WASTE	NO	Intermediate Dwd	11	259	0	248	8.1	0.36	—	—	0.33	0.02	—
FX3831	66329	480	490	WASTE	NO	Intermediate Dwd	5	290	0	284	8.1	0.18	0.01	—	0.16	0.01	—
FX3831	66333	520	530	WASTE	NO	Intermediate Dwd	8	444	0	437	8.1	0.24	—	—	0.22	0.02	—
FX3832	66374	330	340	WASTE	YES	Intermediate Dwd	—	370	0	369	8.7	0.01	—	0.01	—	—	—
FX3832	66386	450	460	WASTE	NO	Intermediate Dwd	3	248	0	245	7.8	0.12	0.01	—	0.1	—	—
FX3832	66390	490	500	WASTE	NO	Intermediate Dwd	10	248	0	238	7.9	0.33	—	—	0.32	0.01	—
FX3832	66394	530	540	WASTE	NO	Intermediate Dwd	10	94	0	84	8.3	0.33	—	—	0.31	0.02	—
FX3832	66398	570	580	WASTE	NO	Intermediate Dwd	—	257	0	256	8.3	0.02	—	0.02	—	—	—
FX3834	66511	400	410	WASTE	NO	Intermediate Dwd	—	235	0	235	8.4	0.01	—	0.01	—	—	—
FX3834	66513	420	430	WASTE	NO	Intermediate Dwd	8	260	0	252	7.9	0.24	—	—	0.23	0.01	—
FX3834	66517	460	470	WASTE	NO	Intermediate Dwd	9	268	0	259	8.5	0.29	—	—	0.28	0.01	—
FX3834	66521	500	510	WASTE	NO	Intermediate Dwd	7	124	0	117	8.6	0.21	—	—	0.21	—	—
FX3834	66525	540	550	WASTE	NO	Intermediate Dwd	1	343	0	342	8.7	0.04	—	—	0.03	—	—
FX3835	66570	390	400	WASTE	YES	Intermediate Dwd	3	281	0	278	8.7	0.1	—	0.02	0.08	—	—
FX3835	66574	430	440	WASTE	NO	Intermediate Dwd	—	211	0	211	8.8	0.01	—	—	—	—	—
FX3835	66578	470	480	WASTE	NO	Intermediate Dwd	7	295	0	288	8	0.23	—	—	0.21	0.01	—
FX3835	66582	510	520	WASTE	NO	Intermediate Dwd	10	295	0	284	8.2	0.33	—	—	0.31	0.02	—
FX3835	66586	550	560	WASTE	NO	Intermediate Dwd	—	41	0	40	8.2	0.02	—	—	0.02	—	—
FX3836	66628	370	380	WASTE	YES	Intermediate Dwd	3	279	0	275	8.3	0.11	—	—	0.1	—	—
FX3836	66632	410	420	WASTE	YES	Intermediate Dwd	2	268	0	265	8.2	0.08	—	—	0.07	—	—
FX3836	66636	450	460	WASTE	NO	Intermediate Dwd	10	295	0	285	8.2	0.32	—	—	0.3	0.02	—
FX3836	66640	490	500	WASTE	NO	Intermediate Dwd	7	337	0	330	8.3	0.21	—	—	0.2	—	—
FX3836	66644	530	540	WASTE	NO	Intermediate Dwd	14	292	0	279	8.3	0.44	—	0.01	0.4	0.02	—
FX3836	66648	570	580	ORE	NO	Intermediate Dwd	4	23	0	18	8.6	0.16	0.02	—	0.11	0.02	0.017
FX3837	66687	360	370	ORE	YES	Intermediate Dwd	—	63	0	62	8.6	0.02	—	—	0.01	-	0.034
FX3837	66691	400	410	ORE	NO	Intermediate Dwd	2	15	0	13	7.9	0.08	0.01	—	0.07	-	0.072
FX3837	66695	440	450	WASTE	NO	Intermediate Dwd	3	337	0	334	7.9	0.1	0.01	—	0.09	-	—
FX3837	66699	480	490	WASTE	NO	Intermediate Dwd	8	295	0	287	8.3	0.28	0.02	—	0.25	0.01	—
FX3837	66703	520	530	WASTE	NO	Intermediate Dwd	10	89	0	79	8.5	0.32	—	—	0.29	0.02	—

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 5 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3837	66707	560	570	ORE	NO	Intermediate Dwd	—	524	0	523	8.6	0.03	—	—	—	0.02	0.047
FX3838	66736	250	260	WASTE	YES	Intermediate Dwd	—	295	0	295	8.8	0.01	—	0.01	—	—	0.009
FX3838	66748	370	380	WASTE	YES	Intermediate Dwd	—	375	0	375	8.4	0.01	—	0.01	—	—	—
FX3838	66752	410	420	WASTE	NO	Intermediate Dwd	—	243	0	243	8.4	—	—	—	—	—	—
FX3838	66756	450	460	WASTE	NO	Intermediate Dwd	7	428	0	421	8.1	0.22	—	—	0.21	0.01	—
FX3838	66760	490	500	WASTE	NO	Intermediate Dwd	8	284	0	276	8.3	0.26	—	—	0.24	0.02	—
FX3839	66797	360	370	WASTE	YES	Intermediate Dwd	—	246	0	245	8.4	—	—	—	—	—	—
FX3840	66829	280	290	WASTE	YES	Intermediate Dwd	—	223	0	223	8.7	0.02	—	—	0.01	—	—
FX3840	66841	400	410	WASTE	YES	Intermediate Dwd	4	378	0	374	8.1	0.14	0.02	—	0.12	—	—
FX3840	66845	440	450	WASTE	YES	Intermediate Dwd	—	254	0	253	8.7	0.01	—	0.01	—	—	—
FX3840	66849	480	490	WASTE	NO	Intermediate Dwd	9	287	0	278	8.1	0.28	—	—	0.26	0.02	—
FX3842	66944	280	290	WASTE	YES	Intermediate Dwd	—	449	449	449	8.7	0.01	—	—	—	—	—
FX3842	66956	400	410	WASTE	YES	Intermediate Dwd	—	322	322	321	8.1	0.01	—	0.01	—	—	—
FX3853	67009	90	100	WASTE	YES	Intermediate Dwd	15	120	8	106	8	0.5	0.03	0.08	0.32	0.06	—
FX3853	67010	100	110	WASTE	YES	Intermediate Dwd	—	277	277	276	8.4	0.02	—	0.02	—	—	—
FX3853	67011	110	120	WASTE	YES	Intermediate Dwd	—	180	180	180	8.3	0.02	—	0.01	—	—	—
FX3853	67012	120	130	WASTE	YES	Intermediate Dwd	—	266	266	265	8.3	0.02	—	0.02	—	—	—
FX3853	67013	130	140	WASTE	YES	Intermediate Dwd	—	194	194	194	8.3	0.02	—	—	—	—	—
FX3853	67014	140	150	WASTE	YES	Intermediate Dwd	—	186	186	185	8.4	0.02	—	0.01	—	—	—
FX3853	67015	150	160	WASTE	YES	Intermediate Dwd	—	203	203	202	8.4	0.02	—	0.01	—	—	—
FX3853	67016	160	170	WASTE	YES	Intermediate Dwd	—	320	320	319	8.4	0.02	—	0.02	—	—	—
FX3853	67017	170	180	WASTE	YES	Intermediate Dwd	—	243	243	242	8.5	0.02	—	0.02	—	—	—
FX3853	67018	180	190	WASTE	YES	Intermediate Dwd	—	329	329	328	8.6	0.01	—	0.01	—	—	—
FX3853	67019	190	200	WASTE	YES	Intermediate Dwd	—	243	243	242	8.6	0.03	—	0.03	—	—	—
FX3853	67020	200	210	WASTE	YES	Intermediate Dwd	—	260	260	260	8.3	0.01	—	0.01	—	—	—
FX3853	67021	210	220	WASTE	YES	Intermediate Dwd	—	349	349	348	8.3	0.02	—	0.01	—	—	—
FX3853	67022	220	230	WASTE	YES	Intermediate Dwd	3	286	95.3	283	8.2	0.11	0.01	—	0.1	—	—
FX3853	67023	230	240	WASTE	YES	Intermediate Dwd	2	303	151.5	301	8.2	0.12	0.04	—	0.07	—	—
FX3853	67024	240	250	WASTE	YES	Intermediate Dwd	3	254	84.7	251	8.2	0.1	—	—	0.1	—	—
FX3853	67025	250	260	WASTE	NO	Intermediate Dwd	4	257	64.3	253	8.2	0.16	0.02	—	0.14	—	—
FX3853	67026	260	270	WASTE	NO	Intermediate Dwd	7	254	36.3	247	8.1	0.24	0.01	—	0.23	—	—
FX3845	67127	360	370	WASTE	YES	Intermediate Dwd	—	210	0	210	8.5	—	—	—	—	—	—
FX3845	67135	440	450	WASTE	NO	Intermediate Dwd	—	212	0	212	8.4	0.01	—	0.01	—	—	—
FX3845	67139	480	490	WASTE	NO	Intermediate Dwd	10	265	0	255	8.2	0.32	—	0.01	0.29	0.02	—

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 6 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3846	67177	360	370	WASTE	NO	Intermediate Dwd	—	364	0	364	8.5	0.02	—	—	0.01	—	—
FX3849	67285	140	150	ORE	YES	Intermediate Dwd	36	9	0.3	−26	7.6	1.4	0.22	0.05	1	0.04	0.012
FX3849	67286	150	160	ORE	YES	Intermediate Dwd	22	8	0.4	−14	7.5	0.92	0.2	0.02	0.7	—	0.014
FX3849	67287	160	170	WASTE	YES	Intermediate Dwd	8	3	0.4	−5	7.8	0.32	0.08	—	0.25	—	—
FX3849	67288	170	180	WASTE	YES	Intermediate Dwd	15	6	0.4	−9	7.9	0.54	0.08	—	0.43	0.04	—
FX3849	67289	180	190	WASTE	YES	Intermediate Dwd	13	4	0.3	−9	7.7	0.5	0.08	—	0.41	—	—
FX3849	67290	190	200	WASTE	YES	Intermediate Dwd	—	8	8	8	8.3	0.02	—	—	0.02	—	—
FX3849	67291	200	210	WASTE	NO	Intermediate Dwd	—	70	70	70	8.7	0.01	—	0.01	—	—	—
FX3849	67292	210	220	WASTE	NO	Intermediate Dwd	—	51	51	50	8.8	0.01	—	—	—	—	—
FX3849	67293	220	230	WASTE	NO	Intermediate Dwd	—	12	12	12	8.7	0.01	—	—	—	—	—
FX3850	67317	160	170	WASTE	YES	Intermediate Dwd	—	157	157	156	8.7	0.02	—	—	0.02	—	—
FX3850	67318	170	180	WASTE	YES	Intermediate Dwd	—	203	203	202	8.1	0.02	—	—	0.02	—	—
FX3850	67319	180	190	WASTE	YES	Intermediate Dwd	—	357	357	357	8.1	0.01	—	0.01	—	—	—
FX3850	67320	190	200	WASTE	YES	Intermediate Dwd	—	352	352	351	8.2	0.02	—	0.01	—	—	—
FX3850	67321	200	210	WASTE	NO	Intermediate Dwd	—	238	238	237	8.3	—	—	—	—	—	—
FX3850	67322	210	220	WASTE	NO	Intermediate Dwd	—	89	89	89	8.5	0.01	—	0.01	—	—	—
FX3852	67335	40	50	WASTE	YES	Intermediate Dwd	—	8	8	7	8.2	0.04	0.01	—	0.02	—	—
FX3852	67336	50	60	WASTE	YES	Intermediate Dwd	5	6	1.2	1	7.4	0.19	0.04	—	0.06	0.09	—
FX3852	67348	170	180	WASTE	YES	Intermediate Dwd	—	246	246	245	8.4	0.01	—	0.01	—	—	—
FX3852	67349	180	190	WASTE	YES	Intermediate Dwd	—	352	352	351	8.3	0.01	—	0.01	—	—	—
FX3852	67350	190	200	WASTE	YES	Intermediate Dwd	4	317	79.3	313	8.1	0.12	—	—	0.12	—	—
FX3852	67351	200	210	WASTE	YES	Intermediate Dwd	—	273	273	272	8.5	0.02	—	—	0.01	—	—
FX3852	67352	210	220	WASTE	YES	Intermediate Dwd	2	237	118.5	235	8.4	0.06	—	—	0.06	—	—
FX3852	67353	220	230	WASTE	NO	Intermediate Dwd	—	231	231	231	8.4	0.02	—	—	0.02	—	—
FX3852	67354	230	240	WASTE	NO	Intermediate Dwd	2	329	164.5	327	8.2	0.06	—	—	0.06	—	—
FX3852	67355	240	250	WASTE	NO	Intermediate Dwd	10	229	22.9	219	8.1	0.34	—	—	0.31	0.02	—
FX3852	67356	250	260	WASTE	NO	Intermediate Dwd	9	334	37.1	324	7.9	0.3	—	—	0.28	0.02	—
FX3852	67357	260	270	WASTE	NO	Intermediate Dwd	11	251	22.8	240	8	0.36	—	—	0.33	0.02	—
FX3852	67358	270	280	WASTE	NO	Intermediate Dwd	11	309	28.1	298	8	0.34	—	0.02	0.3	0.02	—
FX3852	67359	280	290	WASTE	NO	Intermediate Dwd	8	310	38.8	303	8.1	0.24	—	—	0.23	0.01	—
FX3852	67360	290	300	WASTE	NO	Intermediate Dwd	—	141	141	140	8.1	0.03	—	—	0.03	—	—
FX3852	67361	300	310	WASTE	NO	Intermediate Dwd	3	114	38	112	8.3	0.09	—	0.01	0.08	—	—
FX3852	67362	310	320	WASTE	NO	Intermediate Dwd	3	51	17	48	8.2	0.1	—	0.01	0.09	—	—
FX3852	67363	320	330	WASTE	NO	Intermediate Dwd	—	96	96	95	8.1	0.02	—	0.01	0.01	—	—



Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 7 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3883	67378	70	80	WASTE	YES	Intermediate Dwd	—	24	24	24	8.2	0.02	—	—	0.01	—	—
FX3884	67408	170	180	WASTE	YES	Intermediate Dwd	—	215	0	215	8.7	0.01	—	0.01	—	—	—
FX3884	67409	180	190	WASTE	YES	Intermediate Dwd	—	271	0	271	8.4	0.02	—	0.01	0.01	—	—
FX3884	67410	190	200	WASTE	YES	Intermediate Dwd	—	266	0	265	8.4	0.02	—	0.02	—	—	—
FX3884	67411	200	210	WASTE	NO	Intermediate Dwd	—	246	0	246	8.9	0.01	—	0.01	—	—	—
FX3884	67412	210	220	WASTE	NO	Intermediate Dwd	—	221	0	221	8.9	0.01	—	0.01	—	—	—
FX3886	67448	170	180	WASTE	YES	Intermediate Dwd	—	151	0	150	8.7	0.03	—	—	0.03	—	—
FX3886	67449	180	190	WASTE	YES	Intermediate Dwd	—	210	0	209	8.8	0.02	—	—	0.02	—	—
FX3886	67450	190	200	WASTE	YES	Intermediate Dwd	—	339	0	338	8.6	0.02	—	—	0.02	—	—
FX3886	67451	200	210	WASTE	YES	Intermediate Dwd	—	311	0	310	8.7	0.01	—	0.01	—	—	—
FX3886	67452	210	220	WASTE	NO	Intermediate Dwd	—	255	0	254	8.8	0.01	—	0.01	—	—	—
FX3886	67453	220	230	WASTE	NO	Intermediate Dwd	—	157	0	156	9.1	0.01	—	0.01	—	—	—
FX3886	67454	230	240	WASTE	NO	Intermediate Dwd	—	81	0	80	9	0.01	—	0.01	—	—	—
FX3885	67477	60	70	ORE	YES	Intermediate Dwd	—	168	0	165	8.4	0.1	—	—	0.08	0.02	0.438
FX3885	67478	70	80	WASTE	YES	Intermediate Dwd	—	336	0	335	8.5	0.02	—	—	0.02	—	—
FX3885	67487	160	170	WASTE	YES	Intermediate Dwd	—	44	0	44	8.3	0.01	—	0.01	—	—	—
FX3885	67488	170	180	WASTE	YES	Intermediate Dwd	—	243	0	243	8.5	0.01	—	—	—	—	—
FX3885	67489	180	190	WASTE	YES	Intermediate Dwd	—	255	0	254	8.4	0.01	—	—	—	—	—
FX3885	67490	190	200	WASTE	YES	Intermediate Dwd	—	190	0	190	8.5	—	—	—	—	—	—
FX3867	67499	80	90	ORE	YES	Intermediate Dwd	17	5	0	-12	7.6	0.56	0.01	—	0.16	0.39	0.286
FX3867	67500	90	100	ORE	YES	Intermediate Dwd	32	5	0	-26	7.5	1	—	—	0.07	0.94	0.015
FX3867	67510	190	200	ORE	YES	Intermediate Dwd	—	11	0	10	8.3	0.01	—	—	0.01	—	0.042
FX3867	67511	200	210	WASTE	YES	Intermediate Dwd	—	11	0	11	7.7	0.01	—	—	0.01	—	—
FX3867	67512	210	220	WASTE	NO	Intermediate Dwd	—	12	0	12	8	—	—	—	—	—	—
FX3867	67513	220	230	WASTE	NO	Intermediate Dwd	—	41	0	41	8.3	—	—	—	—	—	—
FX3869	67552	40	50	WASTE	YES	Intermediate Dwd	1	2	1	0	0	0.08	0.04	—	—	0.03	—
FX3869	67553	50	60	WASTE	YES	Intermediate Dwd	13	1	0.2	-12	0	0.55	0.14	—	0.28	0.13	—
FX3869	67554	60	70	WASTE	YES	Intermediate Dwd	28	—	0	-27	0	1.1	0.18	—	0.71	0.17	—
FX3865	67569	80	90	WASTE	YES	Intermediate Dwd	10	3	0	-6	7.8	0.4	0.09	—	0.18	0.12	—
FX3865	67570	90	100	ORE	YES	Intermediate Dwd	17	5	0	-12	7.6	0.64	0.1	0.02	0.38	0.15	0.036
FX3865	67579	180	190	WASTE	YES	Intermediate Dwd	1	10	0	9	8.4	0.04	0.01	—	0.03	—	—
FX3865	67580	190	200	WASTE	NO	Intermediate Dwd	1	10	0	8	8.1	0.05	0.01	—	0.04	—	—
FX3865	67581	200	210	WASTE	NO	Intermediate Dwd	14	9	0	-5	7.9	0.57	0.1	0.41	0.03	0.02	—
FX3866	67595	90	100	ORE	YES	Intermediate Dwd	23	2	0	-21	7	0.86	0.12	0.03	0.3	0.41	0.012

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 8 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3866	67602	160	170	ORE	YES	Intermediate Dwd	32	2	0	-30	7.1	1.3	0.31	—	0.05	0.96	0.038
FX3866	67603	170	180	WASTE	YES	Intermediate Dwd	19	2	0	-18	7	0.8	0.18	—	—	0.61	—
FX3866	67604	180	190	ORE	YES	Intermediate Dwd	17	1	0	-15	7.2	0.8	0.26	—	0.17	0.36	0.043
FX3866	67605	190	200	WASTE	YES	Intermediate Dwd	6	-	0	-6	7.1	0.24	0.04	—	0.12	0.07	—
FX3866	67606	200	210	ORE	NO	Intermediate Dwd	21	1	0	-20	7.2	0.74	0.06	—	0.59	0.09	0.015
FX3866	67607	210	220	ORE	NO	Intermediate Dwd	22	5	0	-17	7.5	0.82	0.13	—	0.57	0.12	0.051
FX3858	67682	110	120	WASTE	YES	Intermediate Dwd	2	3	1.5	1	7.6	0.08	—	—	0.08	—	—
FX3858	67683	120	130	WASTE	YES	Intermediate Dwd	3	4	1.3	1	7.6	0.12	0.02	—	0.06	0.04	0.008
FX3858	67690	190	200	WASTE	YES	Intermediate Dwd	-	16	16	15	7.7	0.02	—	—	0.02	—	0.008
FX3858	67691	200	210	ORE	YES	Intermediate Dwd	8	22	2.8	14	7.4	0.28	0.04	—	0.15	0.09	0.056
FX3858	67692	210	220	ORE	YES	Intermediate Dwd	16	16	1	1	7.3	0.58	0.08	0.01	0.3	0.19	0.264
FX3858	67693	220	230	WASTE	YES	Intermediate Dwd	2	11	5.5	9	7.4	0.09	0.01	—	0.08	—	0.009
FX3859	67703	70	80	WASTE	YES	Intermediate Dwd	20	5	0	-15	7.5	0.72	0.06	0.01	0.58	0.06	—
FX3859	67704	80	90	WASTE	NO	Intermediate Dwd	27	3	0	-24	7.3	0.92	0.05	0.04	0.8	0.03	—
FX3860	67746	200	210	ORE	NO	Intermediate Dwd	—	10	10	10	8.5	0.01	—	—	—	—	0.031
FX3860	67747	210	220	ORE	NO	Intermediate Dwd	—	7	7	6	7.8	0.02	—	0.01	0.01	—	0.041
FX3861	67762	110	120	ORE	YES	Intermediate Dwd	3	5	1.7	2	7.6	0.12	0.02	—	0.07	0.03	0.016
FX3861	67770	190	200	ORE	YES	Intermediate Dwd	16	3	0.2	-13	7.2	0.54	0.02	0.05	0.22	0.25	0.061
FX3861	67771	200	210	ORE	YES	Intermediate Dwd	11	1	0.1	-10	7.3	0.4	0.04	—	0.24	0.12	0.047
FX3861	67772	210	220	ORE	NO	Intermediate Dwd	20	—	0	-20	7.3	0.68	0.03	0.03	0.58	0.04	0.011
FX3861	67773	220	230	WASTE	NO	Intermediate Dwd	6	8	1.3	2	8.3	0.19	—	0.02	0.14	0.03	—
FX3862	67783	70	80	WASTE	YES	Intermediate Dwd	3	3	1	0	7.3	0.12	0.02	—	0.05	0.05	—
FX3862	67784	80	90	WASTE	YES	Intermediate Dwd	6	3	0.5	-3	7.2	0.24	0.04	—	0.09	0.11	—
FX3864	67825	90	100	ORE	YES	Intermediate Dwd	14	2	0	-12	7.5	0.54	0.1	—	0.13	0.32	0.032
FX3874	67858	120	130	ORE	YES	Intermediate Dwd	21	3	0	-18	7.5	0.7	0.04	0.01	0.64	0.02	0.198
FX3874	67867	210	220	WASTE	YES	Intermediate Dwd	—	10	0	10	8.3	0.02	—	—	0.01	—	—
FX3875	67880	90	100	WASTE	YES	Intermediate Dwd	24	5	0	-19	7.5	0.8	0.03	0.02	0.4	0.35	—
FX3875	67881	100	110	ORE	YES	Intermediate Dwd	25	4	0	-21	7.3	0.85	0.05	0.05	0.51	0.24	0.102
FX3875	67882	110	120	ORE	YES	Intermediate Dwd	23	5	0	-18	7.2	0.8	0.05	0.02	0.44	0.29	0.123
FX3875	67883	120	130	WASTE	YES	Intermediate Dwd	24	2	0	-21	7.1	0.8	0.04	—	0.35	0.41	—
FX3876	67892	60	70	ORE	YES	Intermediate Dwd	28	2	0	-26	7.2	0.97	0.07	0.01	0.27	0.62	0.049
FX3876	67893	70	80	ORE	YES	Intermediate Dwd	15	3	0	-12	7.3	0.58	0.1	—	0.25	0.23	0.068
FX3877	67907	110	120	ORE	YES	Intermediate Dwd	7	6	0	-1	7.7	0.22	0.01	0.04	0.14	0.03	0.026
FX3877	67908	120	130	ORE	YES	Intermediate Dwd	11	4	0	-7	7.4	0.36	0.02	0.02	0.22	0.1	0.016

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 9 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3877	67917	210	220	ORE	YES	Intermediate Dwd	80	2	0	-78	6.9	3.4	0.8	0.04	0.76	1.8	0.027
FX3877	67918	220	230	ORE	YES	Intermediate Dwd	14	7	0	-6	7.8	0.57	0.13	—	0.41	0.03	0.014
FX3877	67919	230	240	ORE	NO	Intermediate Dwd	7	9	0	2	8.1	0.25	0.02	—	0.22	0.01	0.031
FX3877	67920	240	250	WASTE	NO	Intermediate Dwd	5	8	0	3	8.1	0.21	0.04	—	0.17	—	—
FX3878	67933	70	80	WASTE	YES	Intermediate Dwd	12	5	0	-7	7.8	0.46	0.06	—	0.11	0.28	—
FX3878	67934	80	90	ORE	YES	Intermediate Dwd	17	11	0	-6	7.8	0.59	0.05	0.01	0.17	0.36	0.012
FX3873	68012	110	120	WASTE	YES	Intermediate Dwd	4	2	0	-3	7.2	0.14	—	—	0.13	—	—
FX3880	68031	100	110	WASTE	YES	Intermediate Dwd	13	3	0	-10	7.5	0.43	0.01	0.01	0.37	0.04	—
FX3880	68038	170	180	WASTE	YES	Intermediate Dwd	17	7	0	-10	7.6	0.56	0.01	0.01	0.41	0.13	—
FX3880	68039	180	190	ORE	YES	Intermediate Dwd	22	7	0	-16	7.5	0.74	0.03	0.04	0.38	0.3	0.018
FX3880	68040	190	200	ORE	YES	Intermediate Dwd	2	12	0	10	7.9	0.06	—	0.02	0.04	—	0.04
FX3880	68041	200	210	ORE	YES	Intermediate Dwd	10	8	0	-3	7.7	0.34	—	—	0.29	0.04	0.036
FX3880	68042	210	220	ORE	NO	Intermediate Dwd	23	4	0	-18	7.4	0.77	0.04	—	0.52	0.21	0.035
FX3880	68043	220	230	ORE	NO	Intermediate Dwd	2	11	0	9	8.3	0.07	—	0.02	0.05	—	0.082
FX3880	68044	230	240	ORE	NO	Intermediate Dwd	1	11	0	9	8.7	0.04	—	0.02	0.02	—	0.052
FX3881	68053	70	80	WASTE	YES	Intermediate Dwd	3	4	0	1	7.1	0.12	0.02	—	0.08	0.02	—
FX3881	68054	80	90	WASTE	YES	Intermediate Dwd	4	4	0	0	7.3	0.16	0.02	—	0.12	0.02	—
FX3897	68089	180	190	WASTE	YES	Intermediate Dwd	2	68	34	66	7.5	0.08	—	—	0.06	0.01	—
FX3903	68166	200	210	WASTE	YES	Intermediate Dwd	3	78	26	75	8	0.1	0.01	—	0.09	—	—
FX3888	68213	220	230	WASTE	YES	Intermediate Dwd	—	43	43	42	7.9	0.02	—	—	0.01	0.01	—
FX3857	68291	100	110	ORE	YES	Intermediate Dwd	13	7	0	-6	7.6	0.46	0.05	0.01	0.3	0.1	0.241
FX3857	68292	110	120	ORE	YES	Intermediate Dwd	18	14	0	-4	7.6	0.62	0.06	—	0.28	0.28	0.215
FX3857	68293	120	130	ORE	YES	Intermediate Dwd	11	14	0	3	7.8	0.42	0.06	0.01	0.14	0.21	0.039
FX3898	68307	110	120	WASTE	YES	Intermediate Dwd	6	5	0	-1	8	0.22	0.01	0.02	0.14	0.05	—
FX3898	68308	120	130	WASTE	YES	Intermediate Dwd	10	4	0	-7	7.8	0.34	—	0.02	0.24	0.08	—
FX3898	68309	130	140	WASTE	YES	Intermediate Dwd	10	6	0	-4	7.5	0.36	0.04	—	0.17	0.15	—
FX3899	68329	130	140	WASTE	YES	Intermediate Dwd	2	6	0	4	7.6	0.06	0.02	0.02	0.03	—	—
FX3899	68338	220	230	WASTE	NO	Intermediate Dwd	5	5	0	-1	7.5	0.2	0.03	—	0.13	0.04	—
FX3899	68339	230	240	WASTE	NO	Intermediate Dwd	6	6	0	1	7.6	0.2	0.02	—	0.16	0.02	—
FX3901	68350	90	100	ORE	YES	Intermediate Dwd	12	9	0	-4	7.7	0.42	0.02	0.02	0.22	0.15	0.062
FX3901	68351	100	110	ORE	YES	Intermediate Dwd	13	10	0	-3	7.8	0.46	0.06	0.02	0.36	0.03	0.111
FX3901	68352	110	120	ORE	YES	Intermediate Dwd	14	8	0	-6	7.4	0.52	0.07	0.02	0.32	0.11	0.024
FX3901	68353	120	130	WASTE	YES	Intermediate Dwd	23	9	0	-14	7.4	0.82	0.08	0.05	0.28	0.41	—
FX3902	68366	100	110	ORE	YES	Intermediate Dwd	43	8	0	-35	7.2	1.5	0.13	0.02	0.7	0.65	0.037

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 10 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3902	68367	110	120	ORE	YES	Intermediate Dwd	24	5	0	-19	7.5	0.9	0.12	—	0.14	0.63	0.137
FX3902	68376	200	210	ORE	YES	Intermediate Dwd	—	16	0	16	7.9	0.02	—	—	0.02	—	0.023
FX3902	68377	210	220	WASTE	YES	Intermediate Dwd	—	17	0	17	8	0.01	—	—	—	—	—
FX3902	68378	220	230	WASTE	YES	Intermediate Dwd	—	11	0	11	7.9	0.02	—	0.01	—	—	—
FX3890	68397	160	170	ORE	YES	Intermediate Dwd	—	13	0	12	8.7	0.02	—	—	0.01	—	0.019
FX3890	68398	170	180	WASTE	YES	Intermediate Dwd	—	241	0	240	8.7	0.02	—	—	—	—	—
FX3890	68399	180	190	WASTE	YES	Intermediate Dwd	3	274	0	271	8.5	0.11	—	—	0.11	—	—
FX3890	68400	190	200	WASTE	YES	Intermediate Dwd	4	266	0	262	8.2	0.13	0.01	—	0.12	—	—
FX3890	68401	200	210	WASTE	YES	Intermediate Dwd	2	252	0	249	8.3	0.09	0.01	0.01	0.07	—	—
FX3890	68402	210	220	WASTE	YES	Intermediate Dwd	3	227	0	224	8.2	0.1	0.01	—	0.09	—	—
FX3890	68403	220	230	WASTE	YES	Intermediate Dwd	4	241	0	236	7.8	0.15	0.01	—	0.14	—	—
FX3890	68404	230	240	WASTE	YES	Intermediate Dwd	7	252	0	245	7.6	0.24	0.02	—	0.22	—	—
FX3890	68405	240	250	WASTE	YES	Intermediate Dwd	8	274	0	266	7.7	0.25	—	—	0.24	0.01	—
FX3890	68406	250	260	WASTE	YES	Intermediate Dwd	9	353	0	343	7.5	0.32	0.02	—	0.29	0.01	—
FX3890	68407	260	270	WASTE	YES	Intermediate Dwd	10	243	0	234	7.5	0.32	0.02	—	0.29	0.02	—
FX3890	68408	270	280	WASTE	YES	Intermediate Dwd	9	285	0	277	7.6	0.29	0.01	—	0.27	0.01	—
FX3890	68409	280	290	WASTE	YES	Intermediate Dwd	8	274	0	265	7.9	0.26	—	—	0.26	—	—
FX3890	68410	290	300	WASTE	YES	Intermediate Dwd	12	271	0	259	7.2	0.4	0.03	—	0.36	0.01	—
FX3890	68411	300	310	WASTE	YES	Intermediate Dwd	2	117	0	115	7.4	0.15	0.09	0.01	0.05	—	—
FX3890	68412	310	320	WASTE	YES	Intermediate Dwd	—	65	0	65	7.9	0.03	—	—	0.02	—	—
FX3890	68414	330	340	WASTE	YES	Intermediate Dwd	2	21	0	19	7.8	0.08	0.01	—	0.06	—	—
FX3890	68415	340	350	WASTE	YES	Intermediate Dwd	7	96	0	90	7.9	0.21	—	0.01	0.2	—	—
FX3890	68416	350	360	WASTE	YES	Intermediate Dwd	1	115	0	114	8.4	0.04	—	—	0.03	—	—
FX3892	68447	160	170	WASTE	YES	Intermediate Dwd	—	303	303	303	8.1	0.01	—	0.01	-	—	—
FX3892	68451	200	210	WASTE	YES	Intermediate Dwd	—	231	231	231	8.2	0.01	—	0.01	-	—	—
FX3892	68455	240	250	WASTE	YES	Intermediate Dwd	9	314	34.9	306	7.7	0.3	0.02	—	0.28	—	—
FX3892	68459	280	290	WASTE	YES	Intermediate Dwd	2	131	65.5	130	8.1	0.06	—	—	0.06	—	—
FX3896	68499	230	240	WASTE	YES	Intermediate Dwd	-	67	67	67	8	—	—	—	-	—	—
FX3900	68538	220	230	WASTE	YES	Intermediate Dwd	9	289	32.1	280	7.9	0.29	—	—	0.29	—	—
FX3900	68542	260	270	WASTE	YES	Intermediate Dwd	2	19	9.5	18	8	0.05	—	0.01	0.04	—	—
FX3893	68623	200	210	WASTE	YES	Intermediate Dwd	10	269	26.9	259	7.6	0.31	—	—	0.29	0.01	—
FX3895	68727	320	330	WASTE	YES	Intermediate Dwd	—	73	73	73	7.7	0.01	—	—	—	—	—
FX3910	68766	220	230	WASTE	YES	Intermediate Dwd	—	276	276	276	8.2	—	—	—	—	—	—
FX3910	68770	260	270	WASTE	YES	Intermediate Dwd	11	232	21.1	220	7.9	0.36	—	—	0.34	0.02	—

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 11 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3910	68774	300	310	WASTE	YES	Intermediate Dwd	10	182	18.2	172	7.9	0.31	—	—	0.29	0.02	—
FX3915	68807	180	190	ORE	YES	Intermediate Dwd	—	13	13	12	8.8	0.02	—	0.01	—	—	0.069
FX3915	68812	230	240	ORE	YES	Intermediate Dwd	1	63	63	62	8.2	0.04	—	0.02	0.03	—	0.069
FX3915	68816	270	280	WASTE	YES	Intermediate Dwd	9	254	28.2	245	7.8	0.28	—	—	0.26	0.02	—
FX3915	68820	310	320	WASTE	YES	Intermediate Dwd	19	152	8	132	8	0.64	0.02	—	0.59	0.03	—
FX3915	68824	350	360	ORE	YES	Intermediate Dwd	—	73	73	73	8.4	0.02	—	—	0.02	—	0.045
FX3905	68864	250	260	WASTE	YES	Intermediate Dwd	15	317	21.1	302	7.8	0.49	—	—	0.47	0.02	—
FX3907	68949	180	190	WASTE	YES	Intermediate Dwd	2	281	140.5	280	8.2	0.07	0.01	—	0.06	—	—
FX3907	68953	220	230	WASTE	YES	Intermediate Dwd	11	218	19.8	207	8	0.36	0.01	—	0.34	—	—
FX3907	68957	260	270	WASTE	YES	Intermediate Dwd	11	119	10.8	108	8.3	0.35	—	0.01	0.32	0.02	—
FX3907	68961	300	310	WASTE	YES	Intermediate Dwd	—	254	254	253	8.3	0.02	—	—	0.01	—	—
FX3907	68963	320	330	ORE	YES	Intermediate Dwd	—	441	441	441	9	0.02	—	0.02	—	—	0.02
FX3911	69104	210	220	WASTE	YES	Intermediate Dwd	—	18	18	18	8.6	0.01	—	—	—	0.11	—
FX3911	69108	250	260	WASTE	YES	Intermediate Dwd	—	280	280	280	8.3	0.01	—	—	—	0.02	—
FX3909	69152	240	250	WASTE	YES	Intermediate Dwd	3	312	104	308	8.2	0.12	0.01	—	0.1	—	—
FX3909	69156	280	290	WASTE	YES	Intermediate Dwd	11	218	19.8	207	7.8	0.34	—	—	0.32	0.02	—
FX3909	69160	320	330	WASTE	YES	Intermediate Dwd	13	146	11.2	133	8.1	0.41	—	—	0.39	0.02	—
FX3909	69164	360	370	WASTE	YES	Intermediate Dwd	—	182	182	181	8.4	0.02	—	—	0.02	—	—
FX3909	69166	380	390	ORE	YES	Intermediate Dwd	2	259	129.5	257	8	0.06	—	0.02	0.02	0.02	0.024
FX3912	69199	210	220	WASTE	YES	Intermediate Dwd	—	25	25	24	8.5	0.02	—	—	0.01	—	—
FX3912	69203	250	260	WASTE	YES	Intermediate Dwd	10	429	42.9	419	7.9	0.32	—	—	0.32	—	—
FX3912	69207	290	300	WASTE	YES	Intermediate Dwd	8	329	41.1	321	7.8	0.26	—	0.01	0.25	—	—
FX3912	69211	330	340	WASTE	YES	Intermediate Dwd	5	429	85.8	424	8.5	0.15	—	—	0.15	—	—
FX3913	69246	180	190	ORE	YES	Intermediate Dwd	—	48	48	48	8.9	0.02	—	—	0.01	—	0.08
FX3913	69250	220	230	WASTE	YES	Intermediate Dwd	8	303	37.9	295	7.9	0.24	—	—	0.23	0.01	—
FX3913	69254	260	270	WASTE	YES	Intermediate Dwd	9	317	35.2	308	8	0.28	—	—	0.27	0.01	—
FX3913	69258	300	310	WASTE	YES	Intermediate Dwd	1	121	121	120	8.2	0.04	—	0.01	0.03	—	—
FX3913	69261	330	340	ORE	YES	Intermediate Dwd	—	90	90	90	8.3	0.03	—	—	0.02	—	0.033
FX3926	69289	110	120	WASTE	YES	Intermediate Dwd	—	297	297	297	8.4	0.01	—	0.01	-	—	—
FX3926	69293	150	160	WASTE	YES	Intermediate Dwd	—	85	85	85	8.6	0.01	—	0.01	-	—	—
FX3916	69328	100	110	WASTE	YES	Intermediate Dwd	—	16	16	16	8	0.02	0.01	—	0.01	—	—
FX3916	69334	160	170	WASTE	YES	Intermediate Dwd	—	222	222	222	8.4	0.01	—	0.01	—	—	—
FX3916	69338	200	210	WASTE	YES	Intermediate Dwd	10	347	34.7	337	7.9	0.34	0.01	—	0.31	0.02	—
FX3916	69342	240	250	WASTE	YES	Intermediate Dwd	—	126	126	125	8.1	0.01	—	0.01	—	—	—

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 12 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3928	69384	200	210	WASTE	YES	Intermediate Dwd	5	464	92.8	459	8	0.17	0.01	—	0.15	0.01	—
FX3928	69388	240	250	WASTE	YES	Intermediate Dwd	2	242	121	239	8	0.1	0.02	—	0.07	-	—
FX3928	69392	280	290	WASTE	YES	Intermediate Dwd	10	286	28.6	276	8	0.36	0.02	—	0.32	0.01	—
FX3928	69396	320	330	WASTE	YES	Intermediate Dwd	—	389	389	388	8.2	0.02	0.01	0.02	—	—	—
FX3917	69429	200	210	WASTE	YES	Intermediate Dwd	2	286	143	284	8.2	0.07	—	0.01	0.06	—	—
FX3917	69433	240	250	WASTE	YES	Intermediate Dwd	1	233	233	232	8.1	0.04	—	—	0.04	—	—
FX3917	69437	280	290	WASTE	YES	Intermediate Dwd	8	408	51	401	8	0.24	—	—	0.22	0.02	—
FX3917	69441	320	330	WASTE	YES	Intermediate Dwd	6	386	64.3	381	8.2	0.18	—	0.01	0.17	—	—
FX3917	69445	360	370	WASTE	YES	Intermediate Dwd	4	75	18.8	71	8.2	0.12	—	—	0.11	—	—
FX3918	69480	210	220	WASTE	YES	Intermediate Dwd	2	143	71.5	142	8.2	0.06	—	—	0.05	—	—
FX3918	69484	250	260	WASTE	YES	Intermediate Dwd	3	231	77	228	8	0.12	0.02	—	0.09	—	—
FX3918	69488	290	300	WASTE	YES	Intermediate Dwd	25	206	8.2	181	8	0.8	—	—	0.75	0.05	—
FX3918	69492	330	340	WASTE	YES	Intermediate Dwd	11	112	10.2	101	8	0.34	—	—	0.32	0.02	—
FX3914	69529	200	210	WASTE	YES	Intermediate Dwd	—	248	248	248	8.7	0.01	—	0.01	—	—	—
FX3914	69534	250	260	WASTE	YES	Intermediate Dwd	—	254	254	254	8.6	0.01	—	—	—	—	—
FX3914	69538	290	300	WASTE	YES	Intermediate Dwd	11	259	23.5	248	7.6	0.38	0.02	—	0.35	0.01	—
FX3914	69542	330	340	WASTE	YES	Intermediate Dwd	8	126	15.8	118	8.2	0.25	0.01	—	0.24	—	—
FX3920	69578	190	200	WASTE	YES	Intermediate Dwd	—	171	171	171	9	—	—	—	—	—	—
FX3920	69586	270	280	WASTE	YES	Intermediate Dwd	—	246	246	245	8.6	—	—	—	—	—	—
FX3920	69590	310	320	WASTE	YES	Intermediate Dwd	12	243	20.3	231	7.9	0.39	0.02	—	0.35	0.02	—
FX3920	69594	350	360	WASTE	YES	Intermediate Dwd	13	174	13.4	161	7.8	0.41	—	—	0.39	0.02	—
FX3921	69626	170	180	WASTE	YES	Intermediate Dwd	—	372	372	371	8.5	0.01	—	0.01	—	—	—
FX3921	69634	250	260	WASTE	YES	Intermediate Dwd	—	289	289	288	8.7	0.03	—	0.01	0.02	—	—
FX3921	69638	290	300	WASTE	YES	Intermediate Dwd	9	289	32.1	280	8	0.31	0.02	—	0.27	0.02	—
FX3921	69642	330	340	WASTE	YES	Intermediate Dwd	8	366	45.8	358	8	0.26	—	—	0.25	0.01	—
FX3921	69646	370	380	WASTE	YES	Intermediate Dwd	3	266	88.7	263	8.2	0.1	—	—	0.1	—	—
FX3921	69647	380	390	WASTE	YES	Intermediate Dwd	—	309	309	308	8.3	0.01	—	—	0.01	—	—
FX3921	69648	390	400	WASTE	YES	Intermediate Dwd	—	146	146	145	8.4	0.01	—	—	0.01	—	—
FX3922	69668	190	200	WASTE	YES	Intermediate Dwd	—	281	281	281	8.3	0.02	0.01	—	—	—	—
FX3922	69669	200	210	WASTE	YES	Intermediate Dwd	—	215	215	215	8.4	—	—	—	—	—	—
FX3922	69676	270	280	WASTE	YES	Intermediate Dwd	—	81	81	80	8.7	0.02	—	0.02	—	—	—
FX3922	69677	280	290	WASTE	YES	Intermediate Dwd	3	212	70.7	209	8.3	0.12	—	0.01	0.1	—	—
FX3922	69681	320	330	WASTE	YES	Intermediate Dwd	14	212	15.1	198	7.8	0.46	—	0.02	0.42	0.02	—
FX3922	69685	360	370	WASTE	YES	Intermediate Dwd	12	179	14.9	167	7.9	0.39	—	—	0.37	0.02	—

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 13 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3922	69689	400	410	WASTE	YES	Intermediate Dwd	—	439	439	438	8.4	0.02	—	0.02	—	—	—
FX3919	69732	230	240	WASTE	YES	Intermediate Dwd	5	266	53.2	261	7.6	0.16	—	—	0.15	0.01	—
FX3925	69780	230	240	WASTE	YES	Intermediate Dwd	—	250	250	250	8.3	0.02	—	—	—	—	—
FX3925	69784	270	280	WASTE	YES	Intermediate Dwd	16	275	17.2	259	7.8	0.51	—	0.01	0.47	0.03	—
FX3925	69788	310	320	WASTE	YES	Intermediate Dwd	6	258	43	252	8	0.22	0.02	—	0.18	0.01	—
FX3927	69827	200	210	WASTE	YES	Intermediate Dwd	—	245	245	244	7.9	0.02	—	—	0.01	—	—
FX3927	69831	240	250	WASTE	YES	Intermediate Dwd	—	195	195	195	7.9	0.02	0.01	—	—	—	—
FX3927	69835	280	290	WASTE	YES	Intermediate Dwd	19	289	15.2	271	7.7	0.6	—	—	0.57	0.03	—
FX3927	69839	320	330	WASTE	YES	Intermediate Dwd	1	113	113	112	8.4	0.04	—	—	0.04	—	0.009
FX3927	69843	360	370	WASTE	YES	Intermediate Dwd	—	27	27	27	7.3	0.01	0.01	—	—	—	—
FX3923	69925	230	240	WASTE	YES	Intermediate Dwd	—	211	211	210	8.2	0.01	—	—	—	—	—
FX3923	69933	310	320	WASTE	YES	Intermediate Dwd	7	274	39.1	267	7.7	0.22	—	—	0.2	0.01	—
FX3923	69937	350	360	WASTE	YES	Intermediate Dwd	13	347	26.7	335	7.9	0.41	—	0.01	0.37	0.03	—
FX3923	69941	390	400	WASTE	NO	Intermediate Dwd	17	92	5.4	76	8	0.57	0.04	—	0.5	0.03	—
FX3929	70002	150	160	WASTE	YES	Intermediate Dwd	3	224	74.7	221	7.9	0.1	—	—	0.09	—	—
FX3929	70006	190	200	WASTE	YES	Intermediate Dwd	10	245	24.5	235	7.8	0.32	—	—	0.3	0.02	—
FX3929	70010	230	240	WASTE	YES	Intermediate Dwd	—	114	114	113	7.8	0.02	—	—	0.01	—	—
FX3933	70144	200	210	WASTE	YES	Intermediate Dwd	10	263	26.3	253	7.9	0.32	0.01	0.02	0.28	0.02	—
FX3933	70148	240	250	WASTE	YES	Intermediate Dwd	5	119	23.8	115	8.1	0.16	—	—	0.15	—	—
FX3932	70268	110	120	WASTE	YES	Intermediate Dwd	—	232	232	231	8.3	0.02	—	0.02	—	—	—
FX3932	70272	150	160	WASTE	YES	Intermediate Dwd	—	229	229	229	8.4	0.01	—	0.01	—	—	—
FX3932	70276	190	200	WASTE	YES	Intermediate Dwd	—	224	224	223	8.2	0.01	—	0.01	—	—	—
FX4115	76254	40	50	ORE	NO	Intermediate Dwd	—	11	11	11	8	0.02	—	—	0.01	—	0.153
FX4116	76259	40	50	WASTE	NO	Intermediate Dwd	—	8	8	8	7.5	0.05	0.04	—	—	—	—
FX4247	80844	220	230	WASTE	NO	Intermediate Dwd	—	276	276	276	0	0.02	—	—	—	0.02	—
FX4247	80856	340	350	WASTE	NO	Intermediate Dwd	—	262	262	261	0	0.03	—	—	—	0.02	—
FX4247	80860	380	390	WASTE	NO	Intermediate Dwd	8	259	32.4	251	0	0.28	0.01	—	0.22	0.04	—
FX4247	80864	420	430	WASTE	NO	Intermediate Dwd	7	194	27.7	188	0	0.21	—	—	0.17	0.04	—
FX4247	80872	500	510	WASTE	NO	Intermediate Dwd	—	506	506	505	0	0.02	—	—	—	0.01	—
FX4248	80893	110	120	WASTE	YES	Intermediate Dwd	—	359	359	358	0	0.02	—	—	—	0.02	—
FX4248	80905	230	240	WASTE	YES	Intermediate Dwd	—	111	111	111	0	0.01	—	—	—	0.02	—
FX4248	80917	350	360	WASTE	YES	Intermediate Dwd	3	297	99	294	0	0.11	0.01	—	0.08	0.03	—
FX4248	80921	390	400	WASTE	YES	Intermediate Dwd	10	259	25.9	249	0	0.35	0.02	—	0.3	0.04	—
FX4248	80925	430	440	WASTE	YES	Intermediate Dwd	8	114	14.3	106	0	0.25	—	—	0.21	0.04	—

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 14 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4249	80977	110	120	WASTE	YES	Intermediate Dwd	—	374	374	373	0	0.02	—	—	—	0.02	—
FX4249	80989	230	240	WASTE	YES	Intermediate Dwd	—	303	303	302	0	0.02	—	—	—	0.02	—
FX4249	81001	350	360	WASTE	NO	Intermediate Dwd	—	209	209	208	0	–	—	—	—	0.01	—
FX4249	81003	370	380	WASTE	NO	Intermediate Dwd	7	268	38.3	261	0	0.23	—	—	0.2	0.03	—
FX4249	81005	390	400	WASTE	NO	Intermediate Dwd	10	285	28.5	276	0	0.31	—	—	0.28	0.03	—
FX4249	81009	430	440	WASTE	NO	Intermediate Dwd	5	215	43	210	0	0.16	—	—	0.13	0.03	—
FX4250	81045	190	200	WASTE	YES	Intermediate Dwd	—	206	206	205	0	0.02	—	—	—	0.02	—
FX4250	81061	350	360	WASTE	YES	Intermediate Dwd	2	238	119	236	0	0.07	—	—	0.04	0.02	—
FX4250	81065	390	400	WASTE	YES	Intermediate Dwd	11	268	24.4	257	0	0.36	0.02	—	0.31	0.03	—
FX4250	81069	430	440	WASTE	YES	Intermediate Dwd	7	45	6.4	39	0	0.21	—	—	0.18	0.03	—
FX4250	81073	470	480	WASTE	YES	Intermediate Dwd	2	114	57	113	0	0.05	—	—	0.02	0.03	—
FX4251	81105	190	200	WASTE	YES	Intermediate Dwd	—	309	309	308	0	0.01	—	—	—	0.01	—
FX4251	81121	350	360	WASTE	YES	Intermediate Dwd	8	250	31.3	242	0	0.28	0.02	—	0.22	0.04	—
FX4251	81125	390	400	WASTE	NO	Intermediate Dwd	7	303	43.3	296	0	0.25	0.02	—	0.2	0.03	—
FX4251	81129	430	440	WASTE	NO	Intermediate Dwd	7	96	13.7	89	0	0.23	—	—	0.19	0.04	—
FX4251	81133	470	480	WASTE	NO	Intermediate Dwd	–	224	224	223	0	0.02	—	—	—	0.02	—
FX4406	83219	270	280	WASTE	YES	Intermediate Dwd	8	251		243	0	0.4	0.13	0	0.23	0.04	—
FX4406	83223	310	320	WASTE	YES	Intermediate Dwd	1	433		432	0	0.04	0	0	0.01	0.03	—
FX4406	83227	350	360	WASTE	YES	Intermediate Dwd	0	355		354	0	0.03	0	0	0	0.03	—
FX4410	83346	110	120	WASTE	YES	Intermediate Dwd		224		224	0	0.02				0.02	—
FX4410	83354	190	200	WASTE	YES	Intermediate Dwd	5	265		260	0	0.2	0.05		0.12	0.03	—
FX4410	83358	230	240	WASTE	YES	Intermediate Dwd	9	257		248	0	0.29			0.25	0.04	—
FX4410	83362	270	280	WASTE	YES	Intermediate Dwd	13	86		73	0	0.41			0.36	0.05	—
FX4410	83366	310	320	ORE	YES	Intermediate Dwd	1	125		124	0	0.04				0.03	0.046
FX4409	83388	70	80	WASTE	YES	Intermediate Dwd	0	170		170	0	0.02	0	0	0	0.02	—
FX4409	83392	110	120	WASTE	YES	Intermediate Dwd	0	346		345	0	0.03	0	0	0.01	0.02	—
FX4409	83400	190	200	WASTE	YES	Intermediate Dwd	4	274		270	0	0.14	0.02	0	0.1	0.03	—
FX4409	83404	230	240	WASTE	YES	Intermediate Dwd	10	300		290	0	0.32	0	0	0.27	0.04	—
FX4409	83408	270	280	WASTE	YES	Intermediate Dwd	7	54		47	0	0.22	0	0	0.17	0.05	—
FX4415	83442	150	160	WASTE	YES	Intermediate Dwd		251		251	0	0.03			0.01	0.02	—
FX4415	83446	190	200	WASTE	YES	Intermediate Dwd	4	265		261	0	0.18	0.05		0.09	0.04	—
FX4415	83450	230	240	WASTE	YES	Intermediate Dwd	9	305		297	0	0.28			0.24	0.04	—
FX4415	83454	270	280	WASTE	YES	Intermediate Dwd	8	69		61	0	0.25			0.21	0.04	—
FX4414	83480	70	80	WASTE	YES	Intermediate Dwd		278		278	0	0.02				0.02	—

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 15 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4414	83488	150	160	WASTE	YES	Intermediate Dwd		262		261	0	0.03			0.01	0.02	—
FX4414	83492	190	200	WASTE	YES	Intermediate Dwd	7	251		245	0	0.22			0.17	0.04	—
FX4414	83496	230	240	WASTE	YES	Intermediate Dwd	9	251		242	0	0.3			0.25	0.04	—
FX4414	83500	270	280	WASTE	YES	Intermediate Dwd	8	50		41	0	0.27			0.23	0.04	—
FX4412	83533	110	120	WASTE	YES	Intermediate Dwd		308		307	0	0.03				0.02	—
FX4412	83537	150	160	WASTE	YES	Intermediate Dwd		89		88	0	0.02				0.02	—
FX4412	83541	190	200	WASTE	YES	Intermediate Dwd	5	257		252	0	0.16			0.12	0.03	—
FX4412	83545	230	240	WASTE	YES	Intermediate Dwd	7	295		288	0	0.23			0.19	0.03	—
FX4412	83549	270	280	WASTE	YES	Intermediate Dwd	5	55		50	0	0.16			0.12	0.04	—
FX4413	83574	70	80	WASTE	YES	Intermediate Dwd		289		288	0	0.03			0.01	0.02	—
FX4413	83582	150	160	WASTE	YES	Intermediate Dwd		222		221	0	0.03			0.01	0.02	—
FX4413	83586	190	200	WASTE	YES	Intermediate Dwd	33	257		224	0	1.1	0.07		0.97	0.07	—
FX4413	83590	230	240	WASTE	YES	Intermediate Dwd	16	378		362	0	0.58	0.06		0.48	0.04	—
FX4413	83594	270	280	WASTE	YES	Intermediate Dwd		241		240	0	0.02				0.02	—
FX4461	83683	100	110	ORE	YES	Intermediate Dwd		36		35	0	0.03				0.03	0.04
FX4461	83692	190	200	WASTE	YES	Intermediate Dwd		228		228	0	0.03				0.03	—
FX4461	83696	230	240	WASTE	YES	Intermediate Dwd	7	309		302	0	0.23			0.18	0.04	—
FX4461	83700	270	280	WASTE	YES	Intermediate Dwd	4	172		168	0	0.14			0.11	0.03	—
FX4461	83704	310	320	WASTE	YES	Intermediate Dwd		389		388	0	0.03				0.02	—
FX4458	83732	110	120	WASTE	YES	Intermediate Dwd		52		51	0	0.03				0.03	—
FX4458	83740	190	200	WASTE	YES	Intermediate Dwd	1	219		218	0	0.03				0.03	—
FX4458	83744	230	240	WASTE	YES	Intermediate Dwd	17	245		228	0	0.58	0.02		0.52	0.04	—
FX4458	83748	270	280	WASTE	YES	Intermediate Dwd	49	124		75	0	1.6		0.03	1.5	0.07	—
FX4458	83752	310	320	WASTE	YES	Intermediate Dwd		165		165	0	0.02				0.03	—
FX4431	83786	230	240	WASTE	YES	Intermediate Dwd		307		306	0	0.03				0.02	—
FX4431	83794	310	320	WASTE	YES	Intermediate Dwd	5	260		255	0	0.18			0.14	0.03	—
FX4431	83798	350	360	WASTE	YES	Intermediate Dwd	7	304		297	0	0.25	0.01		0.21	0.03	—
FX4431	83802	390	400	WASTE	YES	Intermediate Dwd	7	65		58	0	0.23			0.19	0.04	—
FX4430	83840	230	240	WASTE	YES	Intermediate Dwd		263		262	0	0.03			0.01	0.02	—
FX4430	83844	270	280	WASTE	YES	Intermediate Dwd		321		320	0	0.03				0.02	—
FX4430	83848	310	320	WASTE	YES	Intermediate Dwd		243		243	0	0.03			0.01	0.02	—
FX4430	83852	350	360	WASTE	NO	Intermediate Dwd	11	274		263	0	0.34			0.3	0.04	—
FX4430	83856	390	400	WASTE	NO	Intermediate Dwd	73	149		76	0	2.3			2.2	0.1	—
FX4430	83860	430	440	WASTE	NO	Intermediate Dwd		246		245	0	0.03				0.03	—

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 16 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4416	83883	110	120	WASTE	YES	Intermediate Dwd	1	61		60	0	0.04				0.04	—
FX4416	83891	190	200	WASTE	YES	Intermediate Dwd	6	276		270	0	0.24	0.05			0.19	—
FX4416	83895	230	240	WASTE	YES	Intermediate Dwd	10	303		293	0	0.33	0.01			0.32	—
FX4416	83899	270	280	WASTE	YES	Intermediate Dwd	12	54		42	0	0.37				0.37	—
FX4418	83938	190	200	WASTE	YES	Intermediate Dwd		227		226	0	0.02				0.02	—
FX4418	83942	230	240	WASTE	YES	Intermediate Dwd	11	251		240	0	0.37	0.02			0.35	—
FX4418	83946	270	280	WASTE	YES	Intermediate Dwd	6	297		291	0	0.21	0.01			0.2	—
FX4418	83950	310	320	WASTE	YES	Intermediate Dwd		422		421	0	0.02				0.02	—
FX4419	83984	190	200	WASTE	YES	Intermediate Dwd		184		183	0	0.03				0.03	—
FX4419	83988	230	240	WASTE	YES	Intermediate Dwd	12	333		321	0	0.39	0.01			0.38	—
FX4419	83992	270	280	WASTE	YES	Intermediate Dwd	11	295		284	0	0.37	0.01			0.35	—
FX4419	83996	310	320	WASTE	YES	Intermediate Dwd	15	376		361	0	0.48				0.47	—
FX4420	84023	110	120	WASTE	YES	Intermediate Dwd		335		334	0	0.03			0.01	0.02	—
FX4420	84031	190	200	WASTE	YES	Intermediate Dwd	1	44		43	0	0.04				0.03	—
FX4420	84035	230	240	WASTE	YES	Intermediate Dwd	27	235		208	0	0.86			0.8	0.06	—
FX4420	84039	270	280	WASTE	YES	Intermediate Dwd	11	376		365	0	0.36			0.31	0.04	—
FX4420	84043	310	320	WASTE	YES	Intermediate Dwd		392		391	0	0.02				0.02	—
FX4421	84074	150	160	WASTE	YES	Intermediate Dwd		311		310	0	0.03			0.01	0.02	—
FX4421	84082	230	240	WASTE	YES	Intermediate Dwd		243		242	0	0.03				0.03	—
FX4421	84086	270	280	WASTE	YES	Intermediate Dwd	11	249		237	0	0.36			0.32	0.04	—
FX4421	84090	310	320	WASTE	YES	Intermediate Dwd	16	136		120	0	0.51			0.45	0.06	—
FX4423	84178	190	200	ORE	YES	Intermediate Dwd		276		275	0	0.03				0.03	0.027
FX4423	84186	270	280	WASTE	YES	Intermediate Dwd		303		302	0	0.02				0.02	—
FX4423	84190	310	320	WASTE	YES	Intermediate Dwd	7	341		333	0	0.23			0.2	0.03	—
FX4423	84194	350	360	WASTE	YES	Intermediate Dwd	8	72		65	0	0.25			0.2	0.05	—
FX4427	84237	270	280	WASTE	YES	Intermediate Dwd		260		259	0	0.02				0.02	—
FX4427	84241	310	320	WASTE	YES	Intermediate Dwd	9	243		234	0	0.31			0.26	0.04	—
FX4427	84245	350	360	WASTE	YES	Intermediate Dwd	5	136		130	0	0.17			0.13	0.04	—
FX4427	84249	390	400	WASTE	YES	Intermediate Dwd		122		121	0	0.02				0.02	—
FX4417	84326	110	120	WASTE	YES	Intermediate Dwd		265		264	0	0.03				0.03	—
FX4417	84334	190	200	ORE	YES	Intermediate Dwd		109		108	0	0.03				0.03	0.029
FX4417	84338	230	240	WASTE	YES	Intermediate Dwd	28	243		215	0	0.92	0.01			0.91	—
FX4417	84342	270	280	WASTE	YES	Intermediate Dwd	48	178		131	0	1.5				1.5	—
FX4417	84346	310	320	WASTE	YES	Intermediate Dwd		165		164	0	0.02				0.02	—

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 17 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4425	84380	190	200	WASTE	YES	Intermediate Dwd		238		237	0	0.03				0.03	—
FX4425	84388	270	280	WASTE	YES	Intermediate Dwd		224		223	0	0.02				0.02	—
FX4425	84392	310	320	WASTE	YES	Intermediate Dwd	7	340		333	0	0.22			0.18	0.04	—
FX4425	84396	350	360	WASTE	YES	Intermediate Dwd	5	274		269	0	0.18	0.03		0.12	0.03	—
FX4425	84400	390	400	WASTE	YES	Intermediate Dwd	9	329		320	0	0.29			0.26	0.03	—
FX4426	84433	190	200	WASTE	YES	Intermediate Dwd	1	47		46	0	0.04				0.03	—
FX4426	84441	270	280	WASTE	YES	Intermediate Dwd	1	160		159	0	0.03				0.03	—
FX4426	84445	310	320	WASTE	YES	Intermediate Dwd	8	271		263	0	0.27			0.23	0.04	—
FX4426	84449	350	360	WASTE	YES	Intermediate Dwd	11	144		133	0	0.35			0.3	0.05	—
FX4426	84453	390	400	WASTE	YES	Intermediate Dwd	2	191		189	0	0.06			0.03	0.03	—
FX4422	84591	230	240	WASTE	YES	Intermediate Dwd		210		209	0	0.03				0.03	—
FX4422	84595	270	280	WASTE	YES	Intermediate Dwd	11	285		274	0	0.39	0.03		0.31	0.04	—
FX4422	84599	310	320	WASTE	YES	Intermediate Dwd	4	307		303	0	0.12		0.09	0.01	0.03	—
FX4422	84603	350	360	WASTE	YES	Intermediate Dwd		407		406	0	0.03			0.01	0.02	—
FX4424	84634	150	160	WASTE	YES	Intermediate Dwd		266		265	0	0.03			0.01	0.02	—
FX4424	84646	270	280	WASTE	YES	Intermediate Dwd	4	199		195	0	0.12			0.09	0.03	—
FX4424	84650	310	320	WASTE	YES	Intermediate Dwd	9	290		281	0	0.34	0.05		0.25	0.04	—
FX4424	84654	350	360	WASTE	YES	Intermediate Dwd	8	130		122	0	0.29	0.03		0.22	0.04	—
FX4424	84658	390	400	WASTE	YES	Intermediate Dwd		188		187	0	0.03	0.01			0.02	—
FX4428	84692	230	240	WASTE	YES	Intermediate Dwd		117		116	0	0.02				0.03	—
FX4428	84696	270	280	WASTE	YES	Intermediate Dwd		241		240	0	0.02				0.02	—
FX4428	84700	310	320	WASTE	YES	Intermediate Dwd	12	299		286	0	0.4			0.37	0.03	—
FX4459	84776	110	120	WASTE	YES	Intermediate Dwd	1	328		327	0	0.03		0.01		0.02	—
FX4459	84784	190	200	WASTE	YES	Intermediate Dwd	1	277		276	0	0.03		0.01		0.02	—
FX4459	84788	230	240	WASTE	YES	Intermediate Dwd	9	301		292	0	0.3			0.27	0.03	—
FX4459	84792	270	280	WASTE	YES	Intermediate Dwd	10	179		169	0	0.31			0.28	0.03	—
FX4459	84796	310	320	WASTE	YES	Intermediate Dwd		237		237	0	0.03				0.03	—
FX4449	85688	230	240	WASTE	YES	Intermediate Dwd		106		105	0	0.03				0.02	—
FX4449	85700	350	360	WASTE	YES	Intermediate Dwd		77		76	0	0.03				0.03	—
FX4449	85704	390	400	WASTE	YES	Intermediate Dwd	14	358		344	0	0.46			0.42	0.04	—
FX4449	85708	430	440	WASTE	YES	Intermediate Dwd	9	304		295	0	0.32	0.02		0.27	0.03	—
FX4449	85712	470	480	WASTE	YES	Intermediate Dwd	9	64		55	0	0.3			0.25	0.05	—
FX4449	85716	510	520	WASTE	YES	Intermediate Dwd		183		182	0	0.03				0.03	—
FX4450	85733	30	40	WASTE	YES	Intermediate Dwd	1	11		9	0	0.05	0.01			0.06	—

Table D-3A. Acid Base Accounting for Intermediate Deadwood (Historical Data) (Page 18 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4450	85737	70	80	WASTE	YES	Intermediate Dwd		155		154	0	0.03				0.03	—
FX4450	85753	230	240	WASTE	YES	Intermediate Dwd		183		182	0	0.03				0.03	—
FX4450	85757	270	280	WASTE	YES	Intermediate Dwd		316		315	0	0.03				0.02	—
FX4450	85773	430	440	WASTE	YES	Intermediate Dwd	8	296		288	0	0.29	0.02		0.24	0.03	—
FX4450	85777	470	480	WASTE	YES	Intermediate Dwd	11	254		243	0	0.37	0.03		0.31	0.04	—
FX4451	85823	230	240	ORE	YES	Intermediate Dwd		125		124	0	0.02				0.03	0.017
FX4451	85839	390	400	WASTE	YES	Intermediate Dwd	1	223		221	0	0.04			0.01	0.03	—
FX4451	85843	430	440	WASTE	YES	Intermediate Dwd	6	267		261	0	0.19			0.15	0.04	—
FX4451	85847	470	480	WASTE	YES	Intermediate Dwd	2	341		339	0	0.06			0.03	0.03	—
FX4451	85851	510	520	WASTE	YES	Intermediate Dwd	3	148		145	0	0.12	0.02		0.06	0.04	—
FX4451	85855	550	560	WASTE	YES	Intermediate Dwd	1	237		236	0	0.04				0.03	—
FX4462	85950	150	160	WASTE	YES	Intermediate Dwd	1	231		230	0	0.04				0.03	—
FX4462	86033	230	240	WASTE	YES	Intermediate Dwd	1	225		224	0	0.05			0.02	0.03	—
FX4462	86037	270	280	WASTE	YES	Intermediate Dwd	6	306		300	0	0.18			0.14	0.04	—
FX4462	86041	310	320	WASTE	YES	Intermediate Dwd	5	234		230	0	0.16			0.11	0.04	—
FX4462	86045	350	360	WASTE	YES	Intermediate Dwd	6	89		83	0	0.24	0.06		0.15	0.03	—
FX4460	86159	190	200	WASTE	YES	Intermediate Dwd	1	23		21	0	0.03				0.03	—
FX4460	86163	230	240	WASTE	YES	Intermediate Dwd	1	166		165	0	0.04		0.01		0.03	—
FX4460	86167	270	280	WASTE	YES	Intermediate Dwd	6	252		247	0	0.18			0.15	0.03	—
FX4460	86171	310	320	WASTE	YES	Intermediate Dwd	6	151		146	0	0.18			0.15	0.03	—
FX4460	86175	350	360	WASTE	YES	Intermediate Dwd	9	374		365	0	0.3		0.09	0.18	0.02	—

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 1 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4748	28184	350	360	WASTE	FALSE	Intermediate Dwd	<0.6	336	#N/A	336	8.8	<0.02	<0.01	<0.02	—
W21R–4748	28185	360	370	WASTE	FALSE	Intermediate Dwd	<0.6	380	#N/A	380	8.84	<0.02	0.01	<0.02	—
W21R–4748	28186	370	380	WASTE	FALSE	Intermediate Dwd	<0.6	265	#N/A	265	8.84	<0.02	<0.01	<0.02	—
W21R–4748	28187	380	390	WASTE	FALSE	Intermediate Dwd	<0.6	253	#N/A	253	8.83	0.02	0.01	<0.02	—
W21R–4748	28188	390	400	WASTE	FALSE	Intermediate Dwd	<0.6	215	#N/A	215	8.84	<0.02	<0.01	<0.02	—
W21R–4748	28189	400	410	WASTE	TRUE	Intermediate Dwd	2.2	249	113	247	8.65	0.08	0.01	0.07	—
W21R–4748	28190	410	420	WASTE	TRUE	Intermediate Dwd	5.6	259	46.2	253	8.63	0.19	0.01	0.18	—
W21R–4748	28191	420	430	WASTE	TRUE	Intermediate Dwd	7.2	290	40.3	283	8.45	0.24	0.01	0.23	—
W21R–4748	28192	430	440	WASTE	TRUE	Intermediate Dwd	11.3	291	25.8	280	8.42	0.37	0.01	0.36	—
W21R–4748	28193	440	450	WASTE	TRUE	Intermediate Dwd	10.3	237	23	227	8.47	0.34	0.01	0.33	—
W21R–4748	28194	450	460	WASTE	TRUE	Intermediate Dwd	8.4	222	26.4	213	8.4	0.29	0.02	0.27	—
W21R–4748	28195	460	470	WASTE	TRUE	Intermediate Dwd	8.4	238	28.3	229	8.38	0.29	0.02	0.27	—
W21R–4748	28196	470	480	WASTE	TRUE	Intermediate Dwd	6.6	307	46.4	300	8.59	0.22	0.01	0.21	—
W21R–4748	28197	480	490	WASTE	TRUE	Intermediate Dwd	5.3	198	37.3	193	8.63	0.18	0.01	0.17	—
W21R–4748	28198	490	500	WASTE	TRUE	Intermediate Dwd	10	113	11.3	103	8.41	0.33	0.01	0.32	—
W21R–4748	28199	500	510	WASTE	TRUE	Intermediate Dwd	7.5	20.9	2.8	13.4	8.48	0.24	<0.01	0.24	—
W21R–4748	28202	510	520	WASTE	TRUE	Intermediate Dwd	3.8	129	33.9	125	8.56	0.12	<0.01	0.12	—
W21R–4748	28203	520	530	WASTE	TRUE	Intermediate Dwd	<0.6	139	#N/A	139	8.87	0.02	0.01	<0.02	—
W21R–4749	28254	260	270	WASTE	FALSE	Intermediate Dwd	<0.6	1.2	#N/A	1.2	7.92	0.06	0.05	<0.02	—
W21R–4749	28255	270	280	WASTE	FALSE	Intermediate Dwd	<0.6	0.8	#N/A	0.8	7.84	<0.02	<0.01	<0.02	—
W21R–4749	28290	550	560	ORE	FALSE	Intermediate Dwd	<0.6	2	#N/A	2	7.93	<0.02	<0.01	<0.02	0.018
W21R–4749	28291	560	570	ORE	FALSE	Intermediate Dwd	<0.6	1.8	#N/A	1.8	7.97	<0.02	<0.01	<0.02	0.023
W21R–4749	28292	570	580	WASTE	FALSE	Intermediate Dwd	<0.6	1.7	#N/A	1.7	7.74	<0.02	<0.01	<0.02	0.003
W21R–4749	28293	580	590	WASTE	FALSE	Intermediate Dwd	<0.6	1.7	#N/A	1.7	7.7	<0.02	<0.01	<0.02	—
W21R–4749	28294	590	600	WASTE	FALSE	Intermediate Dwd	<0.6	2.3	#N/A	2.3	7.89	0.03	0.02	<0.02	—
W21R–4749	28295	600	610	WASTE	FALSE	Intermediate Dwd	<0.6	12.6	#N/A	12.6	7.98	<0.02	0.01	<0.02	—
W21R–4749	28296	610	620	WASTE	FALSE	Intermediate Dwd	<0.6	3.2	#N/A	3.2	7.96	<0.02	<0.01	<0.02	—
W21R–4749	28297	620	630	WASTE	FALSE	Intermediate Dwd	<0.6	2.2	#N/A	2.2	7.75	0.15	0.15	<0.02	0.006
W21R–4749	28298	630	640	ORE	FALSE	Intermediate Dwd	2.5	1.2	0.5	–1.3	7.3	0.67	0.59	0.08	0.029
W21R–4750	28353	340	350	WASTE	FALSE	Intermediate Dwd	<0.6	302	#N/A	302	8.73	<0.02	0.01	<0.02	—
W21R–4750	28357	350	360	WASTE	FALSE	Intermediate Dwd	<0.6	277	#N/A	277	8.78	<0.02	<0.01	<0.02	—
W21R–4750	28358	360	370	WASTE	FALSE	Intermediate Dwd	0.6	240	400	239	8.8	0.03	0.01	0.02	—
W21R–4750	28359	370	380	WASTE	FALSE	Intermediate Dwd	<0.6	242	#N/A	242	8.89	<0.02	<0.01	<0.02	—
W21R–4750	28360	380	390	WASTE	FALSE	Intermediate Dwd	<0.6	204	#N/A	204	8.84	<0.02	0.01	<0.02	—
W21R–4750	28361	390	400	WASTE	FALSE	Intermediate Dwd	2.5	217	86.8	214	8.65	0.09	0.01	0.08	—

Table D-3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 2 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4750	28362	400	410	WASTE	FALSE	Intermediate Dwd	6.3	260	41.3	254	8.47	0.21	0.01	0.2	—
W21R-4750	28363	410	420	WASTE	FALSE	Intermediate Dwd	10	221	22.1	211	8.34	0.34	0.02	0.32	—
W21R-4750	28364	420	430	WASTE	FALSE	Intermediate Dwd	10.3	236	22.9	226	8.46	0.34	0.01	0.33	—
W21R-4750	28365	430	440	WASTE	FALSE	Intermediate Dwd	9.4	263	27.9	253	8.48	0.31	0.01	0.3	—
W21R-4750	28366	440	450	WASTE	FALSE	Intermediate Dwd	9.7	311	32.1	302	8.47	0.32	0.01	0.31	—
W21R-4750	28367	450	460	WASTE	FALSE	Intermediate Dwd	8.4	308	36.7	300	8.51	0.28	0.01	0.27	—
W21R-4750	28368	460	470	WASTE	FALSE	Intermediate Dwd	3.4	277	81.5	274	8.6	0.12	0.01	0.11	—
W21R-4750	28369	470	480	WASTE	FALSE	Intermediate Dwd	10	111	11.1	101	8.44	0.33	0.01	0.32	—
W21R-4750	28370	480	490	WASTE	FALSE	Intermediate Dwd	5.6	50	8.9	44.4	8.48	0.18	<0.01	0.18	—
W21R-4750	28371	490	500	WASTE	FALSE	Intermediate Dwd	2.8	130	46.5	128	8.55	0.09	<0.01	0.09	—
W21R-4751	28416			WASTE	FALSE	Intermediate Dwd	<0.6	256	#N/A	256	8.58	<0.02	0.01	<0.02	—
W21R-4751	28420			WASTE	FALSE	Intermediate Dwd	5.9	243	41.1	237	8.4	0.21	0.02	0.19	—
W21R-4751	28429			WASTE	FALSE	Intermediate Dwd	7.8	241	30.9	234	8.46	0.27	0.02	0.25	—
W21R-4751	28433			WASTE	FALSE	Intermediate Dwd	10.3	72.4	7	62.1	8.46	0.35	0.02	0.33	0.001
W21R-4753	28529	260	270	WASTE	FALSE	Intermediate Dwd	<0.6	290	#N/A	290	8.81	<0.02	<0.01	<0.02	—
W21R-4753	28533	300	310	WASTE	FALSE	Intermediate Dwd	5	260	52	255	8.75	0.18	0.02	0.16	—
W21R-4753	28539	340	350	WASTE	FALSE	Intermediate Dwd	9.4	304	32.3	294	8.68	0.31	0.01	0.3	—
W21R-4753	28546	380	390	WASTE	FALSE	Intermediate Dwd	9.7	163	16.8	153	8.62	0.32	0.01	0.31	—
W21R-4753	28550	420	430	ORE	FALSE	Intermediate Dwd	<0.6	11.4	#N/A	11.4	8.54	0.04	0.04	<0.02	0.041
W21R-4754	28620	230	240	WASTE	FALSE	Intermediate Dwd	0.6	289	481.5	288	8.78	0.03	0.01	0.02	—
W21R-4754	28624	270	280	WASTE	FALSE	Intermediate Dwd	<0.6	232	#N/A	232	8.85	<0.02	0.01	<0.02	—
W21R-4754	28624	270	280	WASTE	FALSE	Intermediate Dwd	9.1	421	46.3	412	8.47	0.3	0.01	0.29	—
W21R-4754	28637	350	360	WASTE	FALSE	Intermediate Dwd	1.6	289	180.4	287	8.62	0.07	0.02	0.05	—
W21R-4754	28641	390	400	WASTE	FALSE	Intermediate Dwd	0.6	100	167	99.6	8.81	0.03	0.01	0.02	—
W21R-4755	28693	270	280	WASTE	FALSE	Intermediate Dwd	0.9	250	277.8	249	8.97	0.04	0.01	0.03	—
W21R-4755	28697	310	320	WASTE	FALSE	Intermediate Dwd	8.1	360	44.4	351	8.56	0.27	0.01	0.26	—
W21R-4755	28706	350	360	WASTE	FALSE	Intermediate Dwd	3.4	286	84.2	283	8.57	0.12	0.01	0.11	—
W21R-4755	28710	390	400	WASTE	FALSE	Intermediate Dwd	<0.6	7.5	#N/A	7.5	8.16	0.11	0.12	<0.02	—
W21R-4756	28740	170	180	WASTE	FALSE	Intermediate Dwd	2.2	265	120.4	263	8.76	0.07	<0.01	0.07	—
W21R-4756	28744	210	220	WASTE	FALSE	Intermediate Dwd	6.3	246	39.1	240	8.54	0.21	0.01	0.2	—
W21R-4756	28748	250	260	WASTE	FALSE	Intermediate Dwd	9.1	297	32.6	287	8.51	0.3	0.01	0.29	—
W21R-4756	28752	290	300	WASTE	FALSE	Intermediate Dwd	<0.6	24	#N/A	24	8.37	<0.02	<0.01	<0.02	—
W21R-4756	28777	490	500	WASTE	FALSE	Intermediate Dwd	<0.6	7.2	#N/A	7.2	8.44	<0.02	<0.01	<0.02	—
W21R-4756	28783	530	540	WASTE	FALSE	Intermediate Dwd	<0.6	25	#N/A	25	8.28	<0.02	<0.01	<0.02	—
W21R-4757	28820	250	260	WASTE	FALSE	Intermediate Dwd	<0.6	295	#N/A	295	9.06	<0.02	<0.01	<0.02	—

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 3 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4757	28824	290	300	WASTE	FALSE	Intermediate Dwd	1.9	265	139.5	263	8.78	0.07	0.01	0.06	—
W21R–4757	28828	330	340	WASTE	FALSE	Intermediate Dwd	9.4	281	29.9	272	8.66	0.31	0.01	0.3	—
W21R–4757	28837	370	380	WASTE	FALSE	Intermediate Dwd	9.4	103	11	93.6	8.74	0.31	0.01	0.3	—
W21R–4758	28910	210	220	WASTE	FALSE	Intermediate Dwd	<0.6	222	#N/A	222	8.98	0.02	0.01	<0.02	—
W21R–4758	28914	250	260	WASTE	FALSE	Intermediate Dwd	8.8	255	29	246	8.52	0.29	0.01	0.28	—
W21R–4758	28918	290	300	WASTE	FALSE	Intermediate Dwd	<0.6	25	#N/A	25	8.32	<0.02	<0.01	<0.02	—
W21R–4759	28965	260	270	WASTE	FALSE	Intermediate Dwd	4.7	285	60.7	281	8.69	0.16	0.01	0.15	—
W21R–4759	28969	300	310	WASTE	FALSE	Intermediate Dwd	2.5	223	89	220	8.85	0.09	0.01	0.08	—
W21R–4759	28975	340	350	WASTE	FALSE	Intermediate Dwd	10	217	21.7	207	8.4	0.34	0.02	0.32	—
W21R–4759	28982	380	390	WASTE	FALSE	Intermediate Dwd	10.3	113	11	103	8.54	0.34	0.01	0.33	—
W21R–4759	28986	420	430	WASTE	FALSE	Intermediate Dwd	0.6	82.6	137.7	82	8.77	0.03	0.01	0.02	—
W21R–4761	29106	80	90	WASTE	FALSE	Intermediate Dwd	<0.6	136	#N/A	136	8.48	<0.02	0.01	<0.02	—
W21R–4761	29110	120	130	WASTE	FALSE	Intermediate Dwd	3.1	222	71.5	218	8.58	0.11	0.01	0.1	—
W21R–4761	29149	440	450	WASTE	FALSE	Intermediate Dwd	0.6	124	207.3	124	8.49	0.03	0.01	0.02	—
W21R–4761	29153	480	490	WASTE	FALSE	Intermediate Dwd	2.8	22.9	8.2	20.1	8.95	0.11	0.02	0.09	—
W21R–4762	29170	120	130	WASTE	FALSE	Intermediate Dwd	<0.6	326	#N/A	326	8.52	<0.02	0.02	<0.02	—
W21R–4762	29209	440	450	WASTE	FALSE	Intermediate Dwd	7.5	243	32.3	235	8.57	0.24	<0.01	0.24	—
W21R–4762	29213	480	490	WASTE	FALSE	Intermediate Dwd	6.3	89.4	14.2	83.1	8.58	0.2	<0.01	0.2	—
W21R–4762	29219	520	530	WASTE	FALSE	Intermediate Dwd	<0.6	332	#N/A	332	9.01	0.04	0.03	<0.02	—
W21R–4763	29256	40	50	WASTE	TRUE	Intermediate Dwd	<0.6	250	#N/A	250	8.25	0.02	0.01	<0.02	0.001
W21R–4763	29260	80	90	WASTE	TRUE	Intermediate Dwd	<0.6	203	#N/A	203	8.28	<0.02	0.01	<0.02	—
W21R–4763	29264	120	130	WASTE	FALSE	Intermediate Dwd	6.3	435	69	428	8.38	0.21	0.01	0.2	—
W21R–4763	29301	420	430	WASTE	TRUE	Intermediate Dwd	1.6	55.3	34.6	53.7	8.51	0.06	0.01	0.05	—
W21R–4763	29305	460	470	WASTE	TRUE	Intermediate Dwd	<0.6	23.3	#N/A	23.3	8.44	<0.02	0.01	<0.02	—
W21R–4764	29332	60	70	WASTE	FALSE	Intermediate Dwd	<0.6	454	#N/A	454	8.62	<0.02	0.01	<0.02	—
W21R–4764	29336	100	110	WASTE	FALSE	Intermediate Dwd	<0.6	236	#N/A	236	8.66	0.02	0.01	<0.02	—
W21R–4764	29340	140	150	WASTE	FALSE	Intermediate Dwd	<0.6	111	#N/A	111	8.56	<0.02	0.01	<0.02	—
W21R–4764	29379	460	470	WASTE	TRUE	Intermediate Dwd	1.6	48.3	30.2	46.7	8.49	0.06	0.01	0.05	—
W21R–4764	29383	500	510	WASTE	TRUE	Intermediate Dwd	<0.6	8.7	#N/A	8.7	8.94	0.02	0.02	<0.02	—
W21R–4765	29451	270	280	WASTE	FALSE	Intermediate Dwd	3.8	264	69.4	260	8.47	0.13	0.01	0.12	—
W21R–4765	29455	310	320	WASTE	FALSE	Intermediate Dwd	7.8	256	32.9	249	8.45	0.26	0.01	0.25	—
W21R–4765	29464	350	360	WASTE	FALSE	Intermediate Dwd	8.8	297	33.7	288	8.5	0.29	0.01	0.28	—
W21R–4765	29468	390	400	WASTE	FALSE	Intermediate Dwd	10	96.3	9.6	86.3	8.51	0.33	0.01	0.32	—
W21R–4765	29472	430	440	WASTE	FALSE	Intermediate Dwd	0.6	96.8	161.3	96.2	8.63	0.03	0.01	0.02	—
W21R–4766	29523	70	80	WASTE	FALSE	Intermediate Dwd	<0.6	296	#N/A	296	8.49	<0.02	<0.01	<0.02	—

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 4 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4766	29527	110	120	WASTE	FALSE	Intermediate Dwd	3.8	249	65.5	245	8.48	0.12	<0.01	0.12	—
W21R–4766	29531	150	160	WASTE	FALSE	Intermediate Dwd	0.9	75.4	83.8	74.5	8.51	0.03	<0.01	0.03	0.007
W21R–4766	29566	430	440	WASTE	FALSE	Intermediate Dwd	1.3	7.3	5.6	6	8.13	0.05	0.01	0.04	—
W21R–4766	29570	470	480	WASTE	FALSE	Intermediate Dwd	<0.6	111	#N/A	111	8.39	<0.02	<0.01	<0.02	—
W21R–4767	29599	110	120	WASTE	FALSE	Intermediate Dwd	<0.6	17.1	#N/A	17.1	8.39	<0.02	<0.01	<0.02	—
W21R–4767	29634	390	400	WASTE	FALSE	Intermediate Dwd	0.6	7.3	12.2	6.7	7.59	0.03	0.01	0.02	—
W21R–4767	29638	430	440	WASTE	FALSE	Intermediate Dwd	0.9	52	57.8	51.1	8.35	0.03	<0.01	0.03	—
W21R–4767	29652	550	560	WASTE	FALSE	Intermediate Dwd	<0.6	5.7	#N/A	5.7	8.44	<0.02	0.01	<0.02	0.008
W21R–4767	29677	750	760	WASTE	FALSE	Intermediate Dwd	<0.6	275	#N/A	275	8.61	<0.02	<0.01	<0.02	—
W21R–4767	29681	790	800	WASTE	FALSE	Intermediate Dwd	<0.6	317	#N/A	317	8.85	<0.02	<0.01	<0.02	0.004
W21R–4768	29691	70	80	WASTE	FALSE	Intermediate Dwd	<0.6	183	#N/A	183	8.5	<0.02	0.01	<0.02	—
W21R–4768	29695	110	120	WASTE	FALSE	Intermediate Dwd	<0.6	227	#N/A	227	8.48	<0.02	<0.01	<0.02	—
W21R–4768	29734	430	440	WASTE	FALSE	Intermediate Dwd	1.3	8.8	6.8	7.5	8.53	0.06	0.02	0.04	0.002
W21R–4768	29738	470	480	WASTE	FALSE	Intermediate Dwd	0.9	14.1	15.7	13.2	8.47	0.03	<0.01	0.03	—
W21R–4769	29789	260	270	WASTE	FALSE	Intermediate Dwd	<0.6	240	#N/A	240	8.67	<0.02	<0.01	<0.02	—
W21R–4769	29793	300	310	WASTE	FALSE	Intermediate Dwd	<0.6	198	#N/A	198	8.58	<0.02	<0.01	<0.02	—
W21R–4769	29799	340	350	WASTE	FALSE	Intermediate Dwd	6.9	248	35.9	241	8.48	0.23	0.01	0.22	—
W21R–4769	29806	380	390	WASTE	FALSE	Intermediate Dwd	5.3	98.5	18.6	93.2	8.51	0.17	<0.01	0.17	—
W21R–4769	29810	420	430	ORE	FALSE	Intermediate Dwd	0.9	67.1	74.6	66.2	8.37	0.04	0.01	0.03	0.015
W21R–4771	29906	130	140	WASTE	FALSE	Intermediate Dwd	<0.6	292	#N/A	292	8.6	<0.02	0.01	<0.02	—
W21R–4771	29912	170	180	WASTE	FALSE	Intermediate Dwd	2.2	236	107.3	234	8.76	0.08	0.01	0.07	—
W21R–4771	29916	210	220	WASTE	FALSE	Intermediate Dwd	10	202	20.2	192	8.4	0.34	0.02	0.32	—
W21R–4771	29954	520	530	WASTE	FALSE	Intermediate Dwd	6.6	34.3	5.2	27.7	8.2	0.22	0.01	0.21	—
W21R–4772	29976	60	70	WASTE	FALSE	Intermediate Dwd	<0.6	9.8	#N/A	9.8	7.8	<0.02	0.01	<0.02	—
W21R–4772	29980	100	110	WASTE	FALSE	Intermediate Dwd	<0.6	186	#N/A	186	8.7	<0.02	0.01	<0.02	—
W21R–4772	30019	420	430	WASTE	FALSE	Intermediate Dwd	7.5	271	36.1	264	8.41	0.25	0.01	0.24	—
W21R–4772	30027	500	510	WASTE	FALSE	Intermediate Dwd	<0.6	126	#N/A	126	9.01	<0.02	0.01	<0.02	—
W21R–4773	30080	310	320	WASTE	FALSE	Intermediate Dwd	<0.6	212	#N/A	212	8.55	0.04	0.03	<0.02	—
W21R–4773	30089	350	360	WASTE	FALSE	Intermediate Dwd	3.8	231	60.9	228	8.62	0.14	0.02	0.12	—
W21R–4773	30093	390	400	WASTE	FALSE	Intermediate Dwd	10.3	226	22	216	8.45	0.35	0.02	0.33	—
W21R–4773	30097	430	440	WASTE	FALSE	Intermediate Dwd	6.3	150	23.8	144	8.48	0.21	0.01	0.2	—
W21R–4773	30107	510	520	WASTE	FALSE	Intermediate Dwd	<0.6	12.6	#N/A	12.6	8.32	<0.02	0.01	<0.02	—
W21R–4774	30172	290	300	WASTE	FALSE	Intermediate Dwd	<0.6	9.2	#N/A	9.2	8.52	<0.02	<0.01	<0.02	—
W21R–4774	30176	330	340	WASTE	FALSE	Intermediate Dwd	<0.6	225	#N/A	225	8.54	<0.02	0.01	<0.02	—
W21R–4774	30185	370	380	WASTE	FALSE	Intermediate Dwd	<0.6	224	#N/A	224	8.55	<0.02	0.01	<0.02	—

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 5 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4774	30189	410	420	WASTE	TRUE	Intermediate Dwd	7.8	410	52.6	403	8.45	0.27	0.02	0.25	—
W21R–4774	30197	490	500	WASTE	TRUE	Intermediate Dwd	7.8	128	16.4	120	8.41	0.27	0.02	0.25	—
W21R–4775	30274	370	380	WASTE	FALSE	Intermediate Dwd	<0.6	47.7	#N/A	47.7	8.55	<0.02	0.01	<0.02	0.001
W21R–4775	30278	410	420	WASTE	FALSE	Intermediate Dwd	11.9	206	17.3	194	8.3	0.4	0.02	0.38	—
W21R–4775	30282	450	460	WASTE	FALSE	Intermediate Dwd	3.8	187	49.1	183	8.48	0.14	0.02	0.12	—
W21R–4776	30362	340	350	WASTE	FALSE	Intermediate Dwd	<0.6	85.4	#N/A	85.4	8.66	<0.02	<0.01	<0.02	—
W21R–4776	30369	380	390	WASTE	FALSE	Intermediate Dwd	<0.6	10.9	#N/A	10.9	8.54	<0.02	0.01	<0.02	0.002
W21R–4776	30373	420	430	WASTE	FALSE	Intermediate Dwd	9.4	290	30.9	281	8.24	0.31	0.01	0.3	—
W21R–4776	30377	460	470	WASTE	FALSE	Intermediate Dwd	1.9	255	134.2	253	8.61	0.07	0.01	0.06	—
W21R–4776	30387	540	550	WASTE	FALSE	Intermediate Dwd	<0.6	36.3	#N/A	36.3	8.48	<0.02	<0.01	<0.02	—
W21R–4776	30399	660	670	WASTE	FALSE	Intermediate Dwd	<0.6	13.8	#N/A	13.8	8.96	<0.02	0.01	<0.02	0.002
W21R–4777	30451	310	320	WASTE	FALSE	Intermediate Dwd	0.9	272	302.7	272	8.65	0.04	0.01	0.03	—
W21R–4777	30460	350	360	WASTE	FALSE	Intermediate Dwd	<0.6	209	#N/A	209	8.67	<0.02	0.01	<0.02	—
W21R–4777	30464	390	400	WASTE	FALSE	Intermediate Dwd	7.5	320	42.6	312	8.34	0.25	0.01	0.24	—
W21R–4777	30468	430	440	WASTE	FALSE	Intermediate Dwd	2.5	425	169.8	422	8.36	0.09	0.01	0.08	—
W21R–4777	30472	470	480	WASTE	TRUE	Intermediate Dwd	<0.6	41.5	#N/A	41.5	8.38	<0.02	0.01	<0.02	—
W21R–4778	30528	240	250	WASTE	FALSE	Intermediate Dwd	<0.6	318	#N/A	318	8.66	<0.02	<0.01	<0.02	—
W21R–4778	30532	280	290	WASTE	FALSE	Intermediate Dwd	<0.6	209	#N/A	209	8.65	<0.02	0.01	<0.02	—
W21R–4778	30536	320	330	WASTE	FALSE	Intermediate Dwd	6.9	431	62.4	424	8.31	0.23	0.01	0.22	—
W21R–4778	30545	360	370	WASTE	FALSE	Intermediate Dwd	7.2	215	29.8	208	8.22	0.25	0.02	0.23	—
W21R–4778	30549	400	410	WASTE	FALSE	Intermediate Dwd	1.9	59	31.1	57.1	8.47	0.07	0.01	0.06	—
W21R–4779	30617	340	350	WASTE	FALSE	Intermediate Dwd	1.9	280	147.4	278	8.41	0.07	0.01	0.06	—
W21R–4779	30621	350	360	WASTE	FALSE	Intermediate Dwd	3.1	362	116.7	359	8.4	0.11	0.01	0.1	—
W21R–4779	30622	360	370	WASTE	FALSE	Intermediate Dwd	3.8	289	76.1	285	8.41	0.13	0.01	0.12	—
W21R–4779	30623	370	380	WASTE	FALSE	Intermediate Dwd	2.2	281	127.8	279	8.39	0.08	0.01	0.07	—
W21R–4779	30624	380	390	WASTE	FALSE	Intermediate Dwd	2.5	216	86.5	214	8.42	0.09	0.01	0.08	—
W21R–4779	30625	390	400	WASTE	FALSE	Intermediate Dwd	5	266	53.3	261	8.38	0.17	0.01	0.16	—
W21R–4779	30626	400	410	WASTE	FALSE	Intermediate Dwd	3.4	348	102.2	344	8.44	0.13	0.02	0.11	—
W21R–4779	30627	410	420	WASTE	FALSE	Intermediate Dwd	6.6	295	44.7	288	8.42	0.23	0.02	0.21	—
W21R–4779	30628	420	430	WASTE	FALSE	Intermediate Dwd	8.1	266	32.9	258	8.38	0.28	0.02	0.26	—
W21R–4779	30629	430	440	WASTE	FALSE	Intermediate Dwd	10.3	208	20.2	198	8.31	0.34	0.01	0.33	—
W21R–4779	30630	440	450	WASTE	FALSE	Intermediate Dwd	7.8	301	38.6	293	8.41	0.26	0.01	0.25	—
W21R–4779	30631	450	460	WASTE	FALSE	Intermediate Dwd	7.2	266	37	259	8.45	0.25	0.02	0.23	—
W21R–4779	30632	460	470	WASTE	FALSE	Intermediate Dwd	1.6	284	177.4	282	8.46	0.06	0.01	0.05	—
W21R–4779	30633	470	480	WASTE	FALSE	Intermediate Dwd	<0.6	121.9	#N/A	121.9	8.28	<0.02	0.01	<0.02	—

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 6 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4779	30634	480	490	WASTE	FALSE	Intermediate Dwd	<0.6	73.1	#N/A	73.1	8.25	<0.02	<0.01	<0.02	—
W21R–4779	30635	490	500	WASTE	FALSE	Intermediate Dwd	<0.6	31.3	#N/A	31.3	8.24	<0.02	<0.01	<0.02	—
W21R–4779	30636	500	510	WASTE	FALSE	Intermediate Dwd	<0.6	84.2	#N/A	84.2	8.31	0.02	0.02	<0.02	—
W21R–4779	30639	510	520	WASTE	FALSE	Intermediate Dwd	<0.6	10.3	#N/A	10.3	8.32	<0.02	0.01	<0.02	—
W21R–4780	30676	130	140	WASTE	FALSE	Intermediate Dwd	3.4	2	0.6	–1.4	7.06	0.31	0.2	0.11	0.001
W21R–4780	30677	140	150	WASTE	FALSE	Intermediate Dwd	14.4	2	0.1	–12.4	6.77	0.94	0.48	0.46	0.003
W21R–4780	30678	150	160	WASTE	FALSE	Intermediate Dwd	5.6	1.5	0.3	–4.1	6.87	0.58	0.4	0.18	0.004
W21R–4780	30679	160	170	WASTE	FALSE	Intermediate Dwd	6.6	1.3	0.2	–5.3	7.06	0.6	0.39	0.21	0.001
W21R–4780	30682	170	180	WASTE	FALSE	Intermediate Dwd	1.9	0.8	0.4	–1.1	7.33	0.24	0.18	0.06	0.001
W21R–4780	30698	330	340	WASTE	FALSE	Intermediate Dwd	<0.6	149	#N/A	149	7.77	<0.02	0.01	<0.02	—
W21R–4780	30701	340	350	WASTE	FALSE	Intermediate Dwd	<0.6	405	#N/A	405	7.68	<0.02	0.01	<0.02	—
W21R–4780	30705	350	360	WASTE	FALSE	Intermediate Dwd	<0.6	202	#N/A	202	7.34	<0.02	0.01	<0.02	—
W21R–4780	30706	360	370	WASTE	FALSE	Intermediate Dwd	<0.6	158	#N/A	158	7.41	0.03	0.03	<0.02	—
W21R–4780	30707	370	380	WASTE	FALSE	Intermediate Dwd	<0.6	189	#N/A	189	7.43	<0.02	0.01	<0.02	—
W21R–4780	30708	380	390	WASTE	FALSE	Intermediate Dwd	<0.6	197	#N/A	197	7.35	<0.02	0.02	<0.02	—
W21R–4780	30709	390	400	WASTE	FALSE	Intermediate Dwd	0.9	298	330.6	297	7.41	0.04	0.01	0.03	—
W21R–4780	30710	400	410	WASTE	FALSE	Intermediate Dwd	6.9	285	41.3	278	8.09	0.24	0.02	0.22	—
W21R–4780	30711	410	420	WASTE	FALSE	Intermediate Dwd	7.5	243	32.3	235	8.37	0.26	0.02	0.24	—
W21R–4780	30712	420	430	WASTE	FALSE	Intermediate Dwd	2.8	196	69.8	193	8.48	0.11	0.02	0.09	—
W21R–4780	30713	430	440	WASTE	FALSE	Intermediate Dwd	<0.6	264	#N/A	264	8.49	<0.02	0.01	<0.02	—
W21R–4780	30714	440	450	WASTE	FALSE	Intermediate Dwd	<0.6	231	#N/A	231	8.4	<0.02	0.01	<0.02	—
W21R–4780	30715	450	460	WASTE	FALSE	Intermediate Dwd	<0.6	161	#N/A	161	8.46	<0.02	0.01	<0.02	—
W21R–4780	30716	460	470	WASTE	FALSE	Intermediate Dwd	<0.6	91.3	#N/A	91.3	8.33	<0.02	0.01	<0.02	—
W21R–4780	30717	470	480	WASTE	FALSE	Intermediate Dwd	<0.6	29.4	#N/A	29.4	8.42	<0.02	<0.01	<0.02	—
W21R–4780	30718	480	490	WASTE	FALSE	Intermediate Dwd	<0.6	44	#N/A	44	8.35	<0.02	<0.01	<0.02	—
W21R–4780	30719	490	500	WASTE	FALSE	Intermediate Dwd	<0.6	23.8	#N/A	23.8	8.37	<0.02	0.01	<0.02	—
W21R–4781	30795	510	520	WASTE	TRUE	Intermediate Dwd	<0.6	0	#N/A	0	7.74	<0.02	0.01	<0.02	—
W21R–4781	30796	520	530	WASTE	FALSE	Intermediate Dwd	<0.6	7.2	#N/A	7.2	7.78	<0.02	0.02	<0.02	—
W21R–4781	30797	530	540	WASTE	FALSE	Intermediate Dwd	<0.6	23	#N/A	23	8.26	<0.02	0.01	<0.02	—
W21R–4781	30798	540	550	WASTE	TRUE	Intermediate Dwd	5.6	244	43.5	238	8.24	0.2	0.02	0.18	—
W21R–4781	30799	550	560	WASTE	TRUE	Intermediate Dwd	6.9	233	33.7	226	8.25	0.24	0.02	0.22	—
W21R–4781	30800	560	570	WASTE	TRUE	Intermediate Dwd	7.5	166	22.2	159	8.26	0.27	0.03	0.24	—
W21R–4781	30801	570	580	WASTE	FALSE	Intermediate Dwd	7.8	262	33.6	255	8.26	0.27	0.02	0.25	—
W21R–4781	30802	580	590	WASTE	FALSE	Intermediate Dwd	7.2	336	46.7	329	8.27	0.25	0.02	0.23	—
W21R–4781	30803	590	600	WASTE	FALSE	Intermediate Dwd	5	215	43	210	8.28	0.17	0.01	0.16	—

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 7 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4783	30951	480	490	WASTE	FALSE	Intermediate Dwd	<0.6	2	#N/A	2	7.77	<0.02	0.01	<0.02	0.002
W21R–4783	30952	490	500	WASTE	FALSE	Intermediate Dwd	<0.6	6.8	#N/A	6.8	7.53	<0.02	0.01	<0.02	—
W21R–4783	30953	500	510	WASTE	TRUE	Intermediate Dwd	<0.6	11.6	#N/A	11.6	7.97	<0.02	<0.01	<0.02	—
W21R–4783	30956	510	520	WASTE	FALSE	Intermediate Dwd	<0.6	87.7	#N/A	87.7	8.46	<0.02	0.01	<0.02	—
W21R–4783	30957	520	530	WASTE	TRUE	Intermediate Dwd	3.4	239	70.2	235	8.32	0.12	0.01	0.11	—
W21R–4783	30958	530	540	WASTE	TRUE	Intermediate Dwd	6.6	384	58.2	377	8.37	0.22	0.01	0.21	—
W21R–4783	30959	540	550	WASTE	FALSE	Intermediate Dwd	10.3	259	25.1	248	8.34	0.34	0.01	0.33	—
W21R–4783	30960	550	560	WASTE	FALSE	Intermediate Dwd	9.4	185	19.7	176	8.37	0.32	0.02	0.3	—
W21R–4783	30961	560	570	WASTE	FALSE	Intermediate Dwd	3.4	250	73.5	247	8.36	0.13	0.02	0.11	—
W21R–4783	30962	570	580	WASTE	FALSE	Intermediate Dwd	6.6	335	50.8	329	8.34	0.23	0.02	0.21	—
W21R–4783	30963	580	590	WASTE	TRUE	Intermediate Dwd	1.6	320	200	318	8.38	0.06	0.01	0.05	—
W21R–4783	30964	590	600	WASTE	TRUE	Intermediate Dwd	<0.6	214	#N/A	214	8.29	<0.02	0.01	<0.02	—
W21R–4783	30967	620	630	WASTE	FALSE	Intermediate Dwd	<0.6	11.4	#N/A	11.4	8.32	<0.02	0.01	<0.02	—
W21R–4783	30968	630	640	WASTE	FALSE	Intermediate Dwd	<0.6	7.5	#N/A	7.5	8.41	<0.02	0.01	<0.02	—
W21R–4783	30969	640	650	WASTE	FALSE	Intermediate Dwd	<0.6	133	#N/A	133	8.48	<0.02	0.01	<0.02	—
W21R–4783	30970	650	660	WASTE	FALSE	Intermediate Dwd	1.6	171	106.8	169	8.49	0.06	0.01	0.05	—
W21R–4783	30971	660	670	WASTE	TRUE	Intermediate Dwd	7.8	174	22.3	166	8.41	0.26	0.01	0.25	—
W21R–4783	30972	670	680	WASTE	TRUE	Intermediate Dwd	10.3	350	34	340	8.4	0.34	0.01	0.33	—
W21R–4783	30975	680	690	WASTE	FALSE	Intermediate Dwd	11.3	192	17	181	8.43	0.37	0.01	0.36	—
W21R–4783	30976	690	700	WASTE	TRUE	Intermediate Dwd	10	160	16	150	8.39	0.34	0.02	0.32	—
W21R–4784	31028	410	420	WASTE	FALSE	Intermediate Dwd	<0.6	9.2	#N/A	9.2	8.35	<0.02	0.01	<0.02	—
W21R–4784	31029	420	430	WASTE	FALSE	Intermediate Dwd	<0.6	50.3	#N/A	50.3	8.28	<0.02	0.01	<0.02	—
W21R–4784	31030	430	440	WASTE	FALSE	Intermediate Dwd	<0.6	214	#N/A	214	8.31	<0.02	0.01	<0.02	—
W21R–4784	31031	440	450	WASTE	FALSE	Intermediate Dwd	<0.6	210	#N/A	210	8.17	<0.02	0.01	<0.02	—
W21R–4784	31032	450	460	WASTE	FALSE	Intermediate Dwd	<0.6	379	#N/A	379	8.25	<0.02	0.01	<0.02	—
W21R–4784	31033	460	470	WASTE	FALSE	Intermediate Dwd	3.8	254	66.8	250	8.19	0.13	0.01	0.12	—
W21R–4784	31034	470	480	WASTE	FALSE	Intermediate Dwd	9.4	174	18.5	164	8.27	0.32	0.02	0.3	—
W21R–4784	31035	480	490	WASTE	FALSE	Intermediate Dwd	5.6	249	44.4	243	8.31	0.2	0.02	0.18	—
W21R–4784	31036	490	500	WASTE	FALSE	Intermediate Dwd	7.5	332	44.2	324	8.33	0.26	0.02	0.24	—
W21R–4784	31037	500	510	WASTE	FALSE	Intermediate Dwd	4.1	269	65.5	265	8.29	0.15	0.02	0.13	—
W21R–4784	31040	510	520	WASTE	FALSE	Intermediate Dwd	6.9	109	15.8	102	8.3	0.23	0.01	0.22	—
W21R–4784	31041	520	530	WASTE	FALSE	Intermediate Dwd	4.4	42.2	9.6	37.8	8.35	0.15	0.01	0.14	—
W21R–4784	31042	530	540	WASTE	FALSE	Intermediate Dwd	5	53.8	10.8	48.8	8.39	0.17	0.01	0.16	—
W21R–4784	31043	540	550	WASTE	FALSE	Intermediate Dwd	1.3	141	108.1	139	8.2	0.05	0.01	0.04	—

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 8 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4784	31044	550	560	WASTE	FALSE	Intermediate Dwd	<0.6	56.8	#N/A	56.8	8.34	0.02	0.01	<0.02	—
W21R–4785	31104	450	460	WASTE	TRUE	Intermediate Dwd	3.1	324	104.6	321	8.23	0.11	0.01	0.1	—
W21R–4785	31105	460	470	WASTE	FALSE	Intermediate Dwd	4.7	283	60.1	278	8.46	0.16	0.01	0.15	—
W21R–4785	31106	470	480	WASTE	FALSE	Intermediate Dwd	1.3	284	218.3	283	8.32	0.05	0.01	0.04	—
W21R–4785	31107	480	490	WASTE	FALSE	Intermediate Dwd	1.3	220	169	218	8.47	0.05	0.01	0.04	—
W21R–4785	31108	490	500	WASTE	FALSE	Intermediate Dwd	2.5	228	91	225	8.51	0.09	0.01	0.08	—
W21R–4785	31109	500	510	WASTE	FALSE	Intermediate Dwd	8.1	236	29.2	228	8.27	0.27	0.01	0.26	—
W21R–4785	31112	510	520	WASTE	TRUE	Intermediate Dwd	9.4	289	30.7	279	8.23	0.31	0.01	0.3	—
W21R–4785	31113	520	530	WASTE	TRUE	Intermediate Dwd	10.6	168	15.8	157	8.24	0.35	0.01	0.34	—
W21R–4785	31114	530	540	WASTE	FALSE	Intermediate Dwd	11.6	191	16.5	180	8.12	0.38	0.01	0.37	—
W21R–4785	31115	540	550	WASTE	FALSE	Intermediate Dwd	9.1	298	32.7	289	8.11	0.3	0.01	0.29	—
W21R–4785	31116	550	560	WASTE	FALSE	Intermediate Dwd	8.4	259	30.8	250	8.08	0.28	0.01	0.27	—
W21R–4785	31117	560	570	WASTE	FALSE	Intermediate Dwd	4.4	303	68.8	298	8.46	0.15	0.01	0.14	—
W21R–4785	31118	570	580	WASTE	FALSE	Intermediate Dwd	7.5	131	17.5	124	8.3	0.25	0.01	0.24	—
W21R–4785	31119	580	590	WASTE	FALSE	Intermediate Dwd	6.9	102	14.8	95.1	8.33	0.23	0.01	0.22	—
W21R–4785	31120	590	600	WASTE	FALSE	Intermediate Dwd	6.6	35.6	5.4	29	7.93	0.21	<0.01	0.21	—
W21R–4786	31190	570	580	WASTE	FALSE	Intermediate Dwd	<0.6	2.2	#N/A	2.2	7.61	0.08	0.08	<0.02	0.001
W21R–4786	31191	580	590	WASTE	TRUE	Intermediate Dwd	<0.6	2.2	#N/A	2.2	7.84	0.11	0.12	<0.02	0.001
W21R–4786	31192	590	600	WASTE	FALSE	Intermediate Dwd	<0.6	3.2	#N/A	3.2	7.89	0.03	0.03	<0.02	0.001
W21R–4787	31262	570	580	WASTE	FALSE	Intermediate Dwd	<0.6	11.4	#N/A	11.4	7.89	<0.02	0.01	<0.02	—
W21R–4787	31263	580	590	WASTE	FALSE	Intermediate Dwd	<0.6	9.6	#N/A	9.6	7.88	<0.02	0.01	<0.02	—
W21R–4787	31264	590	600	WASTE	FALSE	Intermediate Dwd	<0.6	9.1	#N/A	9.1	8.03	<0.02	0.01	<0.02	—
W21R–4788	31333	560	570	WASTE	FALSE	Intermediate Dwd	<0.6	170	#N/A	170	8.38	<0.02	<0.01	<0.02	—
W21R–4788	31334	570	580	WASTE	FALSE	Intermediate Dwd	<0.6	298.8	#N/A	298.8	8.48	<0.02	<0.01	<0.02	—
W21R–4788	31334	570	580	WASTE	FALSE	Intermediate Dwd	<0.6	237	#N/A	237	8.48	<0.02	<0.01	<0.02	—
W21R–4788	31336	590	600	WASTE	TRUE	Intermediate Dwd	<0.6	129	#N/A	129	8.61	<0.02	<0.01	<0.02	—
W21R–4791	31520	290	300	WASTE	FALSE	Intermediate Dwd	<0.6	305	#N/A	305	8.81	<0.02	<0.01	<0.02	—
W21R–4791	31524	330	340	WASTE	TRUE	Intermediate Dwd	3.4	266	78.3	263	8.77	0.12	0.01	0.11	—
W21R–4791	31533	370	380	WASTE	FALSE	Intermediate Dwd	10.9	200	18.3	189	8.41	0.36	0.01	0.35	—
W21R–4791	31537	410	420	WASTE	TRUE	Intermediate Dwd	13.8	115	8.3	101	8.49	0.45	0.01	0.44	—
W21R–4792	31577	260	270	WASTE	FALSE	Intermediate Dwd	4.1	333	81.3	329	8.69	0.14	0.01	0.13	—
W21R–4792	31581	300	310	WASTE	FALSE	Intermediate Dwd	3.8	236	62.2	232	8.74	0.13	0.01	0.12	—
W21R–4793	31883	270	280	WASTE	TRUE	Intermediate Dwd	3.4	305	89.6	301	8.93	0.12	0.01	0.11	—
W21R–4793	31887	310	320	WASTE	TRUE	Intermediate Dwd	3.4	263	77.2	259	8.86	0.12	0.01	0.11	—

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 9 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4794	31656	130	140	WASTE	FALSE	Intermediate Dwd	<0.6	309.0	#N/A	<0.6	309.00	<0.02	<0.01	<0.02	—
W21R-4794	31695	450	460	WASTE	FALSE	Intermediate Dwd	0.6	32.0	53.3	0.6	32.00	0.03	0.01	0.02	—
W21R-4795	31745	380	390	WASTE	FALSE	Intermediate Dwd	10.0	328.0	32.8	318.0	8.53	0.34	0.02	0.32	—
W21R-4796	32203	160	170	WASTE	FALSE	Intermediate Dwd	0.3	24.1	-999	24.1	8.54	0.01	0.01	0.01	0.002
W21R-4796	32248	520	530	WASTE	FALSE	Intermediate Dwd	0.3	9.20	-999	9.20	8.39	0.01	0.01	0.01	0.002
W21R-4797	31790	130	140	WASTE	FALSE	Intermediate Dwd	<0.6	233.0	#N/A	233.0	8.64	<0.02	0.01	<0.02	—
W21R-4797	31829	450	460	WASTE	FALSE	Intermediate Dwd	<0.6	17.9	#N/A	17.9	8.53	<0.02	<0.01	<0.02	—
W21R-4798	31918	130	140	WASTE	FALSE	Intermediate Dwd	0.3	249	-999	249	8.73	0.01	0.01	0.01	—
W21R-4798	31924	170	180	WASTE	FALSE	Intermediate Dwd	0.3	297.7	-999	297.7	8.39	0.01	0.01	0.01	—
W21R-4799	32007	80	90	WASTE	FALSE	Intermediate Dwd	<0.6	193.0	#N/A	193.0	8.41	<0.02	0.01	<0.02	—
W21R-4799	32011	120	130	WASTE	FALSE	Intermediate Dwd	<0.6	240.0	#N/A	240.0	8.28	<0.02	0.01	<0.02	—
W21R-4799	32046	400	410	WASTE	FALSE	Intermediate Dwd	<0.6	53.0	#N/A	53.0	8.52	<0.02	0.01	<0.02	—
W21R-4799	32060	520	530	WASTE	FALSE	Intermediate Dwd	<0.6	224.0	#N/A	224.0	8.78	<0.02	0.01	<0.02	—
W21R-4800	32101	80	90	WASTE	FALSE	Intermediate Dwd	<0.6	308.0	#N/A	308.0	8.80	<0.02	0.01	<0.02	—
W21R-4800	32105	120	130	WASTE	FALSE	Intermediate Dwd	<0.6	235.0	#N/A	235.0	8.65	<0.02	0.01	<0.02	—
W21R-4800	32154	520	530	WASTE	FALSE	Intermediate Dwd	<0.6	463.0	#N/A	463.0	8.80	<0.02	0.02	<0.02	—
W21R-4801	32272	80	90	WASTE	FALSE	Intermediate Dwd	<0.6	303.0	#N/A	303.0	8.81	<0.02	0.01	<0.02	—
W21R-4801	32276	120	130	WASTE	FALSE	Intermediate Dwd	3.8	306.0	80.6	303.0	8.76	0.13	0.01	0.12	—
W21R-4802	32367	90	100	WASTE	FALSE	Intermediate Dwd	0.3	284	-999	284	8.54	0.02	0.02	0.01	—
W21R-4802	32371	130	140	WASTE	FALSE	Intermediate Dwd	0.3	184	-999	184	8.59	0.06	0.05	0.01	0.003
W21R-4803	32472	180	190	WASTE	FALSE	Intermediate Dwd	<0.6	162.0	#N/A	162.0	8.84	0.02	0.01	<0.02	—
W21R-4803	32490	340	350	WASTE	FALSE	Intermediate Dwd	1.3	26.9	20.7	25.6	8.68	0.05	0.01	0.04	—
W21R-4804	32539	110	120	WASTE	FALSE	Intermediate Dwd	<0.6	170.0	#N/A	170.0	8.42	<0.02	0.01	<0.02	—
W21R-4804	32543	150	160	WASTE	FALSE	Intermediate Dwd	<0.6	222.0	#N/A	222.0	8.56	<0.02	0.01	<0.02	—
W21R-4804	32588	510	520	WASTE	FALSE	Intermediate Dwd	3.8	329.0	86.6	325.0	8.50	0.13	0.01	0.12	—
W21R-4805	32634	120	130	WASTE	FALSE	Intermediate Dwd	0.9	262.0	290.6	261.0	8.85	0.04	0.01	0.03	—
W21R-4805	32638	160	170	WASTE	FALSE	Intermediate Dwd	<0.6	345.0	#N/A	345.0	8.59	<0.02	0.01	<0.02	—
W21R-4806	32728	120	130	WASTE	FALSE	Intermediate Dwd	0.3	18.8	-999	18.8	8.62	0.01	0.02	0.01	0.003
W21R-4806	32732	160	170	WASTE	FALSE	Intermediate Dwd	0.3	10.0	-999	10.0	8.53	0.01	0.01	0.01	0.002
W21R-4806	32738	200	210	WASTE	FALSE	Intermediate Dwd	0.3	105	-999	105	8.65	0.01	0.01	0.01	0.008
W21R-4806	32771	480	490	WASTE	FALSE	Intermediate Dwd	2.5	143	57.0	140	8.55	0.09	0.01	0.08	0.002
W21R-4807	32826	130	140	WASTE	FALSE	Intermediate Dwd	<0.6	177.0	#N/A	177.0	8.75	0.03	0.03	<0.02	0.002
W21R-4807	32875	530	540	WASTE	FALSE	Intermediate Dwd	<0.6	64.5	#N/A	64.5	8.88	0.02	0.02	<0.02	0.005
W21R-4808	32964	500	510	WASTE	FALSE	Intermediate Dwd	<0.6	433.0	#N/A	433.0	8.78	<0.02	0.01	<0.02	—

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 10 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4809	33009	80	90	WASTE	FALSE	Intermediate Dwd	<0.6	255.0	#N/A	255.0	8.62	<0.02	0.01	<0.02	—
W21R-4809	33013	120	130	WASTE	FALSE	Intermediate Dwd	<0.6	67.2	#N/A	67.2	8.65	<0.02	0.01	<0.02	—
W21R-4809	33062	520	530	WASTE	FALSE	Intermediate Dwd	<0.6	373.0	#N/A	373.0	8.95	<0.02	0.01	<0.02	—
W21R-4810	33103	80	90	WASTE	FALSE	Intermediate Dwd	0.9	261.0	290.2	260.0	8.58	0.04	0.01	0.03	—
W21R-4810	33107	120	130	WASTE	FALSE	Intermediate Dwd	5.9	219.0	37.2	213.0	8.38	0.21	0.02	0.19	—
W21R-4811	33298	150	160	WASTE	FALSE	Intermediate Dwd	<0.6	218.0	#N/A	218.0	8.67	<0.02	0.01	<0.02	—
W21R-4811	33355	630	640	ORE	FALSE	Intermediate Dwd	<0.6	44.8	#N/A	44.8	8.67	<0.02	0.01	<0.02	0.04
W21R-4812	33203	140	150	WASTE	FALSE	Intermediate Dwd	<0.6	126.0	#N/A	126.0	8.53	<0.02	0.01	<0.02	0.006
W21R-4812	33209	180	190	WASTE	FALSE	Intermediate Dwd	3.8	246.0	64.8	242.0	8.63	0.13	0.01	0.12	—
W21R-4812	33252	540	550	WASTE	FALSE	Intermediate Dwd	1.6	162.0	101.0	160.0	8.45	0.05	<0.01	0.05	—
W21R-4813	33393	160	170	WASTE	FALSE	Intermediate Dwd	<0.6	130.0	#N/A	130.0	8.15	<0.02	0.01	<0.02	0.002
W21R-4813	33399	200	210	WASTE	FALSE	Intermediate Dwd	<0.6	171.0	#N/A	171.0	8.40	<0.02	0.01	<0.02	—
W21R-4814	33485	160	170	WASTE	FALSE	Intermediate Dwd	<0.6	5.8	#N/A	5.8	7.98	0.23	0.23	<0.02	0.003
W21R-4815	33561	250	260	WASTE	FALSE	Intermediate Dwd	2.2	259.0	117.6	257.0	8.55	0.08	0.01	0.07	—
W21R-4816	33653	230	240	WASTE	FALSE	Intermediate Dwd	<0.6	246.0	#N/A	246.0	8.79	<0.02	0.01	<0.02	—
W21R-4816	33713	710	720	WASTE	FALSE	Intermediate Dwd	<0.6	250.0	#N/A	250.0	9.08	<0.02	0.02	<0.02	0.003
W21R-4817	33843	250	260	WASTE	FALSE	Intermediate Dwd	<0.6	205.0	#N/A	205.0	9.03	<0.02	<0.01	<0.02	—
W21R-4817	33864	410	420	WASTE	FALSE	Intermediate Dwd	<0.6	2.3	#N/A	2.3	8.48	<0.02	0.01	<0.02	—
W21R-4818	33744	200	210	WASTE	TRUE	Intermediate Dwd	<0.6	44.7	#N/A	44.7	8.69	<0.02	0.01	<0.02	—
W21R-4818	33748	240	250	WASTE	FALSE	Intermediate Dwd	<0.6	214.0	#N/A	214.0	8.73	<0.02	0.01	<0.02	—
W21R-4820	33899	240	250	WASTE	FALSE	Intermediate Dwd	<0.6	220.0	#N/A	220.0	8.62	<0.02	0.01	<0.02	—
W21R-4821	33971	240	250	WASTE	FALSE	Intermediate Dwd	<0.6	11.8	#N/A	11.8	8.44	<0.02	<0.01	<0.02	—
W21R-4821	34010	560	570	WASTE	FALSE	Intermediate Dwd	6.9	190.0	27.5	183.0	8.50	0.23	0.01	0.22	—
W21R-4823	34149	160	170	WASTE	FALSE	Intermediate Dwd	1.9	347.0	182.8	345.0	8.74	0.08	0.02	0.06	—
W21R-4823	34155	200	210	WASTE	FALSE	Intermediate Dwd	<0.6	264.0	#N/A	264.0	8.63	<0.02	<0.01	<0.02	—
W21R-4823	34159	240	250	WASTE	FALSE	Intermediate Dwd	<0.6	292.0	#N/A	292.0	8.39	<0.02	0.01	<0.02	—
W21R-4823	34219	720	730	ORE	TRUE	Intermediate Dwd	<0.6	141.0	#N/A	141.0	8.14	0.04	0.04	<0.02	0.047
W21R-4858	36242	240	250	WASTE	FALSE	Intermediate Dwd	<0.6	1.3	#N/A	1.3	7.41	<0.02	0.01	<0.02	—
W21R-4858	36243	250	260	WASTE	FALSE	Intermediate Dwd	<0.6	0.5	#N/A	0.5	7.06	0.02	0.02	<0.02	—
W21R-4792	31587	340	350	WASTE	FALSE	Intermediate Dwd	8.1	438	54.0	429	8.47	0.27	0.01	0.26	—
W21R-4792	31594	380	390	WASTE	FALSE	Intermediate Dwd	7.5	340	45.4	333	8.49	0.25	0.01	0.24	—
W21R-4792	31598	420	430	WASTE	FALSE	Intermediate Dwd	0.3	127	-999	127	8.38	0.01	0.01	0.01	—
W21R-4793	31896	350	360	WASTE	FALSE	Intermediate Dwd	9.4	383	40.7	373	8.46	0.31	0.01	0.30	—
W21R-4793	31900	390	400	WASTE	FALSE	Intermediate Dwd	6.6	266	40.3	260	8.44	0.22	0.01	0.21	—

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 11 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4794	31687	370	380	WASTE	FALSE	Intermediate Dwd	10.9	227.0	20.8	10.9	227.00	0.36	0.01	0.35	—
W21R-4794	31691	410	420	WASTE	FALSE	Intermediate Dwd	3.8	325.0	85.5	3.8	325.00	0.13	0.01	0.12	—
W21R-4795	31749	420	430	WASTE	FALSE	Intermediate Dwd	8.4	264.0	31.4	255.0	8.61	0.28	0.01	0.27	—
W21R-4795	31753	460	470	WASTE	FALSE	Intermediate Dwd	5.0	43.3	8.7	38.3	8.56	0.16	<0.01	0.16	—
W21R-4796	32234	400	410	WASTE	FALSE	Intermediate Dwd	13.4	219	16.4	206	8.37	0.44	0.01	0.43	—
W21R-4796	32238	440	450	WASTE	FALSE	Intermediate Dwd	5.3	75.3	14.2	70.0	8.61	0.18	0.01	0.17	—
W21R-4797	31825	410	420	WASTE	FALSE	Intermediate Dwd	9.4	269.0	28.6	259.0	8.34	0.31	0.01	0.30	—
W21R-4798	31957	450	460	WASTE	FALSE	Intermediate Dwd	1.3	228	175.6	227	8.68	0.05	0.01	0.04	—
W21R-4799	32050	440	450	WASTE	FALSE	Intermediate Dwd	1.3	102.0	78.5	101.0	8.72	0.05	0.01	0.04	—
W21R-4799	32054	480	490	WASTE	FALSE	Intermediate Dwd	14.7	31.4	2.1	16.7	8.28	0.48	0.01	0.47	—
W21R-4800	32148	480	490	WASTE	FALSE	Intermediate Dwd	6.6	42.1	6.4	35.5	8.41	0.22	0.01	0.21	—
W21R-4801	32315	440	450	WASTE	FALSE	Intermediate Dwd	<0.6	164.0	#N/A	164.0	8.48	<0.02	0.01	<0.02	—
W21R-4801	32319	480	490	WASTE	FALSE	Intermediate Dwd	4.7	113.0	23.9	108.0	8.56	0.16	0.01	0.15	—
W21R-4802	32410	450	460	WASTE	FALSE	Intermediate Dwd	5.0	304	60.9	299	8.57	0.17	0.01	0.16	—
W21R-4802	32414	490	500	WASTE	FALSE	Intermediate Dwd	3.4	324	95.2	320	8.61	0.12	0.01	0.11	—
W21R-4803	32497	380	390	WASTE	FALSE	Intermediate Dwd	9.1	260.0	28.6	251.0	8.45	0.30	0.01	0.29	—
W21R-4803	32501	420	430	WASTE	FALSE	Intermediate Dwd	11.6	76.1	6.6	64.5	8.46	0.39	0.02	0.37	—
W21R-4804	32578	430	440	WASTE	FALSE	Intermediate Dwd	2.2	2.8	1.3	0.6	9.10	0.09	0.02	0.07	—
W21R-4804	32582	470	480	WASTE	FALSE	Intermediate Dwd	6.9	112.0	16.2	105.0	8.55	0.24	0.02	0.22	—
W21R-4805	32677	480	490	WASTE	FALSE	Intermediate Dwd	3.8	6.1	1.6	2.3	8.32	0.13	0.01	0.12	—
W21R-4806	32777	520	530	WASTE	FALSE	Intermediate Dwd	0.3	56.3	-999	56.3	8.37	0.02	0.01	0.01	—
W21R-4807	32865	450	460	WASTE	FALSE	Intermediate Dwd	8.8	292.0	33.2	283.0	8.49	0.29	0.01	0.28	—
W21R-4807	32869	490	500	WASTE	FALSE	Intermediate Dwd	<0.6	40.4	#N/A	40.4	8.59	<0.02	0.01	<0.02	—
W21R-4808	32960	460	470	WASTE	FALSE	Intermediate Dwd	4.7	269.0	57.2	264.0	8.54	0.16	0.01	0.15	—
W21R-4809	33056	480	490	WASTE	FALSE	Intermediate Dwd	0.9	103.0	114.1	102.0	8.55	0.04	0.01	0.03	—
W21R-4810	33146	440	450	WASTE	FALSE	Intermediate Dwd	1.6	136.0	84.8	134.0	8.70	0.07	0.02	0.05	—
W21R-4810	33150	480	490	WASTE	FALSE	Intermediate Dwd	11.9	5.0	0.4	-6.9	8.28	0.39	0.01	0.38	—
W21R-4811	33304	190	200	WASTE	FALSE	Intermediate Dwd	4.4	368.0	83.7	364.0	8.39	0.15	0.01	0.14	—
W21R-4811	33337	470	480	WASTE	FALSE	Intermediate Dwd	3.4	73.4	21.6	70.0	8.45	0.12	0.01	0.11	—
W21R-4811	33343	510	520	WASTE	FALSE	Intermediate Dwd	5.9	131.0	22.2	125.0	8.43	0.20	0.01	0.19	—
W21R-4812	33213	220	230	WASTE	FALSE	Intermediate Dwd	0.6	131.0	218.7	131.0	8.46	0.03	0.01	0.02	—
W21R-4812	33246	500	510	WASTE	FALSE	Intermediate Dwd	<0.6	216.0	#N/A	216.0	8.50	<0.02	0.01	<0.02	—
W21R-4813	33432	480	490	WASTE	FALSE	Intermediate Dwd	13.4	232.0	17.3	219.0	8.15	0.45	0.02	0.43	—
W21R-4813	33438	520	530	WASTE	FALSE	Intermediate Dwd	<0.6	10.8	#N/A	10.8	8.44	0.02	0.01	<0.02	—

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 12 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4813	33446	600	610	WASTE	FALSE	Intermediate Dwd	<0.6	59.1	#N/A	59.1	8.43	<0.02	0.01	<0.02	0.011
W21R-4814	33520	440	450	WASTE	FALSE	Intermediate Dwd	10.3	235.0	22.8	225.0	8.36	0.34	0.01	0.33	—
W21R-4814	33524	480	490	WASTE	FALSE	Intermediate Dwd	8.1	70.8	8.7	62.7	8.29	0.27	0.01	0.26	—
W21R-4815	33565	290	300	WASTE	FALSE	Intermediate Dwd	6.9	263.0	38.1	256.0	8.27	0.24	0.02	0.22	—
W21R-4815	33569	330	340	WASTE	FALSE	Intermediate Dwd	9.1	245.0	26.9	236.0	8.33	0.31	0.02	0.29	—
W21R-4815	33578	370	380	WASTE	FALSE	Intermediate Dwd	5.9	25.6	4.3	19.7	8.30	0.20	0.01	0.19	—
W21R-4816	33657	270	280	WASTE	FALSE	Intermediate Dwd	10.6	467.0	44.1	457.0	8.25	0.37	0.03	0.34	—
W21R-4816	33661	310	320	WASTE	FALSE	Intermediate Dwd	5.0	276.0	55.2	271.0	8.62	0.18	0.02	0.16	—
W21R-4818	33791	600	610	WASTE	FALSE	Intermediate Dwd	4.1	239.0	58.3	235.0	8.40	0.14	0.01	0.13	—
W21R-4818	33795	640	650	WASTE	FALSE	Intermediate Dwd	2.5	262.0	105.0	260.0	8.50	0.09	0.01	0.08	—
W21R-4820	33903	280	290	WASTE	FALSE	Intermediate Dwd	0.6	304.0	506.3	303.0	8.49	0.03	0.01	0.02	—
W21R-4821	34014	600	610	WASTE	FALSE	Intermediate Dwd	7.8	49.5	6.3	41.7	8.25	0.25	<0.01	0.25	—
W21R-4823	34198	560	570	WASTE	FALSE	Intermediate Dwd	15.9	134.0	8.4	118.0	8.50	0.52	0.01	0.51	—
W21R-4822	34051	120	130	WASTE	FALSE	Intermediate Dwd	<0.6	145.0	#N/A	145.0	8.53	<0.02	<0.01	<0.02	0.0002
W21R-4822	34055	160	170	WASTE	FALSE	Intermediate Dwd	0.6	237.0	394.2	236.0	8.60	0.03	0.01	0.02	0.00005
W21R-4822	34094	480	490	WASTE	FALSE	Intermediate Dwd	9.4	77.1	8.2	67.7	8.49	0.31	0.01	0.30	0.0001
W21R-4822	34100	520	530	WASTE	FALSE	Intermediate Dwd	<0.6	184.0	#N/A	184.0	8.58	<0.02	0.01	<0.02	0.00005
W21R-4824	34270	360	370	WASTE	FALSE	Intermediate Dwd	<0.6	336.0	#N/A	336.0	8.67	<0.02	0.01	<0.02	0.0009
W21R-4824	34278	440	450	WASTE	FALSE	Intermediate Dwd	<0.6	270.0	#N/A	270.0	8.82	<0.02	0.01	<0.02	0.00005
W21R-4824	34282	480	490	WASTE	FALSE	Intermediate Dwd	<0.6	301.0	#N/A	301.0	8.57	<0.02	0.01	<0.02	0.00005
W21R-4824	34288	520	530	WASTE	FALSE	Intermediate Dwd	<0.6	380.0	#N/A	380.0	8.66	<0.02	0.01	<0.02	0.00005
W21R-4824	34292	560	570	WASTE	FALSE	Intermediate Dwd	3.1	266.0	85.8	263.0	8.45	0.11	0.01	0.10	0.0001
W21R-4824	34296	600	610	WASTE	FALSE	Intermediate Dwd	<0.6	396.0	#N/A	396.0	8.64	<0.02	0.01	<0.02	0.00005
W21R-4825	34350	270	280	WASTE	FALSE	Intermediate Dwd	<0.6	312.0	#N/A	312.0	8.65	<0.02	<0.01	<0.02	0.0003
W21R-4825	34363	350	360	WASTE	FALSE	Intermediate Dwd	0.6	128.0	213.5	128.0	8.71	0.03	0.01	0.02	0.00005
W21R-4825	34385	550	560	WASTE	FALSE	Intermediate Dwd	<0.6	308.0	#N/A	308.0	8.32	<0.02	0.01	<0.02	0.0002
W21R-4825	34389	590	600	WASTE	FALSE	Intermediate Dwd	3.1	280.0	90.3	277.0	8.47	0.11	0.01	0.10	0.00005
W21R-4825	34393	630	640	WASTE	FALSE	Intermediate Dwd	1.6	286.0	179.0	285.0	8.52	0.06	0.01	0.05	0.00005
W21R-4826	34450	330	340	ORE	FALSE	Intermediate Dwd	<0.6	12.1	#N/A	12.1	8.26	<0.02	0.01	<0.02	0.0312
W21R-4826	34463	410	420	WASTE	FALSE	Intermediate Dwd	<0.6	8.5	#N/A	8.5	8.22	<0.02	0.01	<0.02	0.0055
W21R-4826	34477	530	540	WASTE	FALSE	Intermediate Dwd	4.1	254.0	61.9	250.0	8.40	0.14	0.01	0.13	0.0001
W21R-4826	34481	570	580	WASTE	FALSE	Intermediate Dwd	3.1	306.0	98.6	303.0	8.30	0.12	0.02	0.10	0.00005
W21R-4826	34485	610	620	WASTE	FALSE	Intermediate Dwd	<0.6	299.0	#N/A	299.0	8.52	<0.02	0.01	<0.02	0.00005

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 13 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4827	34531	200	210	WASTE	FALSE	Intermediate Dwd	<0.6	263.0	#N/A	263.0	8.52	<0.02	<0.01	<0.02	0.0012
W21R-4827	34539	280	290	WASTE	FALSE	Intermediate Dwd	<0.6	211.0	#N/A	211.0	8.45	<0.02	<0.01	<0.02	0.0003
W21R-4827	34578	600	610	WASTE	FALSE	Intermediate Dwd	8.1	84.3	10.4	76.2	8.20	0.27	0.01	0.26	0.00005
W21R-4856	36095	210	220	WASTE	FALSE	Intermediate Dwd	<0.6	216.0	#N/A	216.0	8.53	<0.02	<0.01	<0.02	0.0002
W21R-4856	36099	250	260	WASTE	FALSE	Intermediate Dwd	<0.6	230.0	#N/A	230.0	8.61	<0.02	<0.01	<0.02	0.00005
W21R-4857	36142	180	190	WASTE	FALSE	Intermediate Dwd	<0.6	283.0	#N/A	283.0	8.82	<0.02	<0.01	<0.02	0.00005
W21R-4857	36150	260	270	WASTE	FALSE	Intermediate Dwd	1.6	236.0	147.7	235.0	8.52	0.06	0.01	0.05	0.00005
W21R-4857	36154	300	310	WASTE	FALSE	Intermediate Dwd	10.0	206.0	20.6	196.0	8.43	0.33	0.01	0.32	0.00005
W21R-4857	36193	620	630	WASTE	FALSE	Intermediate Dwd	2.2	73.8	33.5	71.6	8.40	0.08	0.01	0.07	0.0001
W21R-4857	36206	700	710	WASTE	FALSE	Intermediate Dwd	<0.6	209.0	#N/A	209.0	8.43	<0.02	0.01	<0.02	0.0008
W21R-4862	36408	150	160	WASTE	FALSE	Intermediate Dwd	<0.6	389.0	#N/A	389.0	8.34	<0.02	0.01	<0.02	0.00005
W21R-4862	36414	190	200	WASTE	FALSE	Intermediate Dwd	1.6	132.0	82.4	130.0	8.50	0.06	0.01	0.05	0.00005
W21R-4862	36418	230	240	WASTE	FALSE	Intermediate Dwd	10.0	284.0	28.4	274.0	8.18	0.34	0.02	0.32	0.00005
W21R-4862	36422	270	280	WASTE	FALSE	Intermediate Dwd	0.6	182.0	303.8	182.0	8.29	0.03	0.01	0.02	0.0001
W21R-4862	36453	510	520	WASTE	FALSE	Intermediate Dwd	<0.6	23.4	#N/A	23.4	8.20	<0.02	0.01	<0.02	0.0005
W21R-4862	36457	550	560	WASTE	FALSE	Intermediate Dwd	0.9	4.5	5.0	3.6	8.52	0.04	0.01	0.03	0.0007
W21R-4865	36583	220	230	WASTE	FALSE	Intermediate Dwd	2.5	221.0	88.4	219.0	8.47	0.10	0.02	0.08	0.00005
W21R-4865	36587	260	270	WASTE	FALSE	Intermediate Dwd	9.7	204.0	21.0	194.0	8.24	0.33	0.02	0.31	0.00005
W21R-4865	36591	300	310	WASTE	FALSE	Intermediate Dwd	9.4	213.0	22.7	204.0	8.30	0.32	0.02	0.30	0.0005
W21R-4865	36597	340	350	WASTE	FALSE	Intermediate Dwd	<0.6	54.8	#N/A	54.8	8.45	<0.02	<0.01	<0.02	0.00005
W21R-4866	36680	250	260	WASTE	FALSE	Intermediate Dwd	<0.6	261.0	#N/A	261.0	8.49	0.02	0.01	<0.02	0.0001
W21R-4866	36684	290	300	WASTE	FALSE	Intermediate Dwd	6.9	300.0	43.4	293.0	8.34	0.23	0.01	0.22	0.00005
W21R-4866	36688	330	340	WASTE	FALSE	Intermediate Dwd	9.1	260.0	28.6	251.0	8.30	0.30	0.01	0.29	0.00005
W21R-4866	36697	370	380	WASTE	FALSE	Intermediate Dwd	1.9	40.8	21.5	38.9	8.34	0.06	<0.01	0.06	0.0001
W21R-4866	36701	410	420	WASTE	FALSE	Intermediate Dwd	<0.6	62.1	#N/A	62.1	8.45	0.02	0.02	<0.02	0.0004
W21R-4867	36773	240	250	WASTE	FALSE	Intermediate Dwd	0.6	313.0	522.3	313.0	8.67	0.03	0.01	0.02	0.00005
W21R-4867	36773	240	250	WASTE	FALSE	Intermediate Dwd	0.6	313.0	522.3	313.0	8.67	0.03	0.01	0.02	0.00005
W21R-4867	36777	280	290	WASTE	FALSE	Intermediate Dwd	3.8	253.0	66.4	249.0	8.43	0.13	0.01	0.12	0.00005
W21R-4867	36777	280	290	WASTE	FALSE	Intermediate Dwd	3.8	253.0	66.4	249.0	8.43	0.13	0.01	0.12	0.00005
W21R-4867	36781	320	330	WASTE	FALSE	Intermediate Dwd	6.9	214.0	31.0	207.0	8.45	0.23	0.01	0.22	0.00005
W21R-4867	36781	320	330	WASTE	FALSE	Intermediate Dwd	6.9	214.0	31.0	207.0	8.45	0.23	0.01	0.22	0.00005
W21R-4867	36790	360	370	WASTE	FALSE	Intermediate Dwd	8.8	100.0	11.4	91.4	8.43	0.29	0.01	0.28	0.00005
W21R-4867	36790	360	370	WASTE	FALSE	Intermediate Dwd	8.8	100.0	11.4	91.4	8.43	0.29	0.01	0.28	0.00005

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 14 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4867	36794	400	410	WASTE	FALSE	Intermediate Dwd	<0.6	153.0	#N/A	153.0	8.56	0.02	0.01	<0.02	0.0002
W21R-4867	36794	400	410	WASTE	FALSE	Intermediate Dwd	<0.6	153.0	#N/A	153.0	8.56	0.02	0.01	<0.02	0.0002
W21R-4868	36849	230	240	WASTE	FALSE	Intermediate Dwd	0.9	305.0	338.4	304.0	8.77	0.04	0.01	0.03	0.00005
W21R-4868	36853	270	280	WASTE	FALSE	Intermediate Dwd	3.1	222.0	71.7	219.0	8.74	0.11	0.01	0.10	0.00005
W21R-4868	36857	310	320	WASTE	FALSE	Intermediate Dwd	10.0	221.0	22.1	211.0	8.31	0.33	0.01	0.32	0.00005
W21R-4868	36866	350	360	WASTE	FALSE	Intermediate Dwd	2.8	159.0	56.7	156.0	8.40	0.10	0.01	0.09	0.0002
W21R-4871	37132	290	300	WASTE	FALSE	Intermediate Dwd	<0.6	344.0	#N/A	344.0	8.87	<0.02	0.01	<0.02	0.0008
W21R-4871	37136	330	340	WASTE	FALSE	Intermediate Dwd	3.1	265.0	85.4	262.0	8.49	0.12	0.02	0.10	0.00005
W21R-4871	37145	370	380	WASTE	FALSE	Intermediate Dwd	8.1	219.0	27.0	211.0	8.27	0.28	0.02	0.26	0.00005
W21R-4871	37149	410	420	WASTE	FALSE	Intermediate Dwd	8.1	240.0	29.6	232.0	8.34	0.27	0.01	0.26	0.00005
W21R-4873	37314	310	320	WASTE	FALSE	Intermediate Dwd	4.4	256.0	58.2	252.0	8.54	0.15	0.01	0.14	0.0005
W21R-4873	37323	350	360	WASTE	FALSE	Intermediate Dwd	5.0	213.0	42.7	208.0	8.36	0.18	0.02	0.16	0.0002
W21R-4873	37327	390	400	WASTE	FALSE	Intermediate Dwd	10.3	204.0	19.8	193.0	8.26	0.35	0.02	0.33	0.00005
W21R-4873	37331	430	440	WASTE	FALSE	Intermediate Dwd	2.2	107.0	48.7	105.0	8.40	0.08	0.01	0.07	0.00005
W21R-4878	37530	140	150	WASTE	TRUE	Intermediate Dwd	<0.6	215.0	#N/A	215.0	9.08	0.02	0.01	<0.02	0.00005
W21R-4878	37536	180	190	WASTE	TRUE	Intermediate Dwd	<0.6	142.0	#N/A	142.0	8.68	<0.02	0.01	<0.02	0.0002
W21R-4878	37573	500	510	WASTE	FALSE	Intermediate Dwd	2.2	165.0	75.0	163.0	8.36	0.09	0.02	0.07	0.0016
W21R-4879	37599	110	120	WASTE	TRUE	Intermediate Dwd	<0.6	253.0	#N/A	253.0	8.87	<0.02	0.01	<0.02	0.0007
W21R-4879	37603	150	160	WASTE	TRUE	Intermediate Dwd	<0.6	184.0	#N/A	184.0	8.81	<0.02	0.01	<0.02	0.0003
W21R-4879	37638	430	440	WASTE	FALSE	Intermediate Dwd	8.4	192.0	22.8	183.0	8.35	0.28	0.01	0.27	0.0006
W21R-4880	37710	480	490	WASTE	FALSE	Intermediate Dwd	<0.6	5.2	#N/A	5.2	8.20	0.02	0.02	<0.02	0.0039
W21R-4882	37775	250	260	WASTE	TRUE	Intermediate Dwd	<0.6	250.0	#N/A	250.0	8.35	<0.02	0.02	<0.02	0.0002
W21R-4882	37779	290	300	WASTE	TRUE	Intermediate Dwd	<0.6	222.0	#N/A	222.0	8.81	<0.02	0.01	<0.02	0.00005
W21R-4883	37815	290	300	WASTE	FALSE	Intermediate Dwd	3.4	241.0	71.0	238.0	8.62	0.12	0.01	0.11	0.00005
W21R-4883	37819	330	340	WASTE	FALSE	Intermediate Dwd	6.6	238.0	36.0	231.0	8.27	0.23	0.02	0.21	0.00005
W21R-4883	37827	360	370	WASTE	FALSE	Intermediate Dwd	<0.6	2.2	#N/A	2.2	8.77	0.02	0.02	<0.02	0.00005
W21R-4883	37829	380	390	WASTE	FALSE	Intermediate Dwd	8.4	211.0	25.1	202.0	8.24	0.29	0.02	0.27	0.0003
W21R-4883	37833	420	430	WASTE	FALSE	Intermediate Dwd	5.9	46.6	7.9	40.7	8.19	0.20	0.01	0.19	0.0002
W21R-4884	37893	350	360	WASTE	FALSE	Intermediate Dwd	4.4	293.0	66.7	289.0	8.59	0.15	0.01	0.14	0.00005
W21R-4884	37897	390	400	WASTE	FALSE	Intermediate Dwd	5.3	260.0	49.1	255.0	8.52	0.18	0.01	0.17	0.00005
W21R-4884	37901	430	440	WASTE	FALSE	Intermediate Dwd	9.4	212.0	22.6	203.0	8.35	0.32	0.02	0.30	0.00005
W21R-4884	37905	470	480	WASTE	FALSE	Intermediate Dwd	1.3	144.0	110.6	143.0	8.56	0.05	0.01	0.04	0.0001
W21R-4884	37911	510	520	ORE	FALSE	Intermediate Dwd	<0.6	40.3	#N/A	40.3	8.47	0.04	0.03	<0.02	0.0145

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 15 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4886	37996	190	200	WASTE	TRUE	Intermediate Dwd	<0.6	261.0	#N/A	261.0	8.57	<0.02	0.01	<0.02	0.0002
W21R-4886	37996	190	200	WASTE	TRUE	Intermediate Dwd	<0.6	261.0	#N/A	261.0	8.57	<0.02	0.01	<0.02	0.0002
W21R-4886	38000	230	240	WASTE	TRUE	Intermediate Dwd	8.1	227.0	28.0	219.0	8.42	0.27	0.01	0.26	0.0001
W21R-4886	38000	230	240	WASTE	TRUE	Intermediate Dwd	8.1	227.0	28.0	219.0	8.42	0.27	0.01	0.26	0.0001
W21R-4886	38043	590	600	WASTE	FALSE	Intermediate Dwd	0.9	21.6	24.0	20.7	8.27	0.05	0.02	0.03	0.0082
W21R-4886	38043	590	600	WASTE	FALSE	Intermediate Dwd	0.9	21.6	24.0	20.7	8.27	0.05	0.02	0.03	0.0082
W21R-4886	38047	630	640	WASTE	FALSE	Intermediate Dwd	0.6	123.0	204.2	122.0	8.87	0.03	0.01	0.02	0.0004
W21R-4886	38047	630	640	WASTE	FALSE	Intermediate Dwd	0.6	123.0	204.2	122.0	8.87	0.03	0.01	0.02	0.0004
W21R-4890	38077	240	250	WASTE	FALSE	Intermediate Dwd	6.3	300.0	47.7	294.0	7.62	0.21	0.01	0.20	0.0003
W21R-4887	38104	210	220	WASTE	TRUE	Intermediate Dwd	3.1	285.0	92.0	282.0	8.66	0.12	0.02	0.10	0.0005
W21R-4887	38108	250	260	WASTE	TRUE	Intermediate Dwd	<0.6	230.0	#N/A	230.0	8.80	<0.02	0.01	<0.02	0.0002
W21R-4887	38148	580	590	WASTE	FALSE	Intermediate Dwd	3.8	174.0	45.8	170.0	8.43	0.13	0.01	0.12	0.0024
W21R-4887	38165	700	710	WASTE	FALSE	Intermediate Dwd	8.1	70.1	8.7	62.0	8.43	0.27	0.01	0.26	0.0003
W21R-4888	38186	180	190	WASTE	TRUE	Intermediate Dwd	<0.6	272.0	#N/A	272.0	8.76	<0.02	0.01	<0.02	0.00005
W21R-4888	38190	220	230	WASTE	FALSE	Intermediate Dwd	6.6	246.0	37.3	240.0	8.42	0.23	0.02	0.21	0.00005
W21R-4888	38194	260	270	WASTE	FALSE	Intermediate Dwd	6.3	334.0	53.0	328.0	8.51	0.21	0.01	0.20	0.00005
W21R-4888	38198	300	310	WASTE	FALSE	Intermediate Dwd	<0.6	21.9	#N/A	21.9	8.36	0.07	0.07	<0.02	0.0004
W21R-4891	38317	400	410	WASTE	FALSE	Intermediate Dwd	<0.6	173.0	#N/A	173.0	8.61	<0.02	<0.01	<0.02	0.0059
W21R-4891	38321	440	450	ORE	FALSE	Intermediate Dwd	<0.6	7.5	#N/A	7.5	8.59	<0.02	<0.01	<0.02	0.0732
W21R-4891	38325	480	490	WASTE	FALSE	Intermediate Dwd	1.6	219.0	136.8	217.0	8.60	0.06	0.01	0.05	0.0003
W21R-4891	38331	520	530	WASTE	FALSE	Intermediate Dwd	8.8	345.0	39.2	336.0	8.31	0.29	0.01	0.28	0.0001
W21R-4891	38335	560	570	WASTE	FALSE	Intermediate Dwd	3.1	304.0	97.9	301.0	8.45	0.11	0.01	0.10	0.0002
W21R-4891	38339	600	610	WASTE	FALSE	Intermediate Dwd	6.3	458.0	72.6	451.0	8.59	0.21	0.01	0.20	0.0002
W21R-4892	38399	330	340	WASTE	FALSE	Intermediate Dwd	0.9	312.0	346.6	311.0	8.79	0.04	0.01	0.03	0.00005
W21R-4892	38416	450	460	WASTE	FALSE	Intermediate Dwd	8.4	184.0	21.9	175.0	8.38	0.28	0.01	0.27	0.00005
W21R-4892	38420	490	500	WASTE	FALSE	Intermediate Dwd	7.5	198.0	26.4	190.0	8.41	0.25	0.01	0.24	0.00005
W21R-4892	38426	530	540	WASTE	FALSE	Intermediate Dwd	4.7	126.0	26.9	122.0	8.50	0.18	0.03	0.15	0.002
W21R-4893	38506	460	470	WASTE	FALSE	Intermediate Dwd	6.3	98.0	15.6	91.7	8.40	0.21	0.01	0.20	0.0005
W21R-4893	38510	500	510	WASTE	FALSE	Intermediate Dwd	9.1	239.0	26.2	230.0	8.47	0.30	0.01	0.29	0.0005
W21R-4893	38516	540	550	WASTE	FALSE	Intermediate Dwd	2.5	123.0	49.1	120.0	8.56	0.08	<0.01	0.08	0.0005
W21R-4894	38593	390	400	WASTE	FALSE	Intermediate Dwd	<0.6	275.0	#N/A	275.0	8.65	<0.02	<0.01	<0.02	0.00005
W21R-4894	38593	390	400	WASTE	FALSE	Intermediate Dwd	<0.6	275.0	#N/A	275.0	8.65	<0.02	<0.01	<0.02	0.00005
W21R-4896	38727	280	290	WASTE	FALSE	Intermediate Dwd	<0.6	8.1	#N/A	8.1	7.93	<0.02	0.01	<0.02	0.0003

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 16 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4896	38748	440	450	WASTE	FALSE	Intermediate Dwd	0.6	3.4	5.7	2.8	8.51	0.03	0.01	0.02	0.0009
W21R-4896	38752	480	490	WASTE	FALSE	Intermediate Dwd	3.8	249.0	65.5	245.0	8.20	0.13	0.01	0.12	0.0012
W21R-4896	38758	520	530	WASTE	FALSE	Intermediate Dwd	3.4	173.0	50.9	170.0	8.28	0.14	0.03	0.11	0.0064
W21R-4896	38762	560	570	WASTE	FALSE	Intermediate Dwd	0.6	69.5	115.8	68.9	8.28	0.03	0.01	0.02	0.0019
W21R-4897	38834	360	370	WASTE	FALSE	Intermediate Dwd	5.3	449.0	84.6	443.0	7.84	0.18	0.01	0.17	0.00005
W21R-4897	38838	400	410	WASTE	FALSE	Intermediate Dwd	6.9	229.0	33.2	222.0	7.69	0.23	0.01	0.22	0.00005
W21R-4897	38842	440	450	WASTE	FALSE	Intermediate Dwd	5.9	253.0	42.8	247.0	8.15	0.20	0.01	0.19	0.0002
W21R-4897	38852	520	530	WASTE	FALSE	Intermediate Dwd	2.8	36.0	12.9	33.2	8.18	0.10	0.01	0.09	0.0005
W21R-4898	38917	300	310	WASTE	FALSE	Intermediate Dwd	<0.6	307.0	#N/A	307.0	8.61	<0.02	<0.01	<0.02	0.0003
W21R-4898	38923	340	350	WASTE	FALSE	Intermediate Dwd	<0.6	301.0	#N/A	301.0	8.58	<0.02	<0.01	<0.02	0.0002
W21R-4898	38934	420	430	WASTE	FALSE	Intermediate Dwd	<0.6	175.0	#N/A	175.0	8.17	<0.02	0.01	<0.02	0.0002
W21R-4898	38942	500	510	WASTE	FALSE	Intermediate Dwd	<0.6	216.0	#N/A	216.0	8.25	<0.02	0.01	<0.02	0.0003
W21R-4898	38948	540	550	WASTE	FALSE	Intermediate Dwd	2.5	278.0	111.3	276.0	8.19	0.09	0.01	0.08	0.0002
W21R-4898	38952	580	590	WASTE	FALSE	Intermediate Dwd	6.6	73.1	11.1	66.5	8.69	0.22	0.01	0.21	0.0001
W21R-4900	39082	290	300	ORE	FALSE	Intermediate Dwd	<0.6	1.2	#N/A	1.2	7.80	0.41	0.48	<0.02	0.0751
W21R-4900	39103	450	460	WASTE	FALSE	Intermediate Dwd	6.6	313.0	47.4	306.0	8.31	0.22	0.01	0.21	0.00005
W21R-4900	39107	490	500	WASTE	FALSE	Intermediate Dwd	<0.6	396.0	#N/A	396.0	8.68	<0.02	0.01	<0.02	0.0008
W21R-4901	39177	300	310	WASTE	FALSE	Intermediate Dwd	<0.6	259.0	#N/A	259.0	8.53	<0.02	0.02	<0.02	0.0004
W21R-4901	39183	340	350	WASTE	FALSE	Intermediate Dwd	0.6	220.0	367.2	220.0	8.43	0.06	0.04	0.02	0.0002
W21R-4901	39190	380	390	WASTE	FALSE	Intermediate Dwd	5.3	218.0	41.2	213.0	8.39	0.18	0.01	0.17	0.0003
W21R-4902	39216	190	200	WASTE	FALSE	Intermediate Dwd	3.1	126.0	40.5	123.0	8.68	0.13	0.03	0.10	0.0006
W21R-4902	39245	430	440	WASTE	FALSE	Intermediate Dwd	3.4	274.0	80.6	271.0	8.26	0.19	0.08	0.11	0.00005
W21R-4902	39255	510	520	WASTE	FALSE	Intermediate Dwd	<0.6	183.0	#N/A	183.0	8.32	<0.02	<0.01	<0.02	0.0001
W21R-4903	39320	290	300	WASTE	FALSE	Intermediate Dwd	<0.6	233.0	#N/A	233.0	8.41	<0.02	0.01	<0.02	0.0009
W21R-4903	39324	330	340	WASTE	FALSE	Intermediate Dwd	<0.6	193.0	#N/A	193.0	8.62	0.02	0.01	<0.02	0.0008
W21R-4904	39356	240	250	WASTE	FALSE	Intermediate Dwd	<0.6	23.0	#N/A	23.0	7.87	<0.02	0.01	<0.02	0.0009
W21R-4904	39360	280	290	WASTE	FALSE	Intermediate Dwd	<0.6	23.0	#N/A	23.0	8.37	<0.02	0.01	<0.02	0.0108
W21R-4904	39364	320	330	WASTE	FALSE	Intermediate Dwd	<0.6	40.2	#N/A	40.2	8.56	<0.02	<0.01	<0.02	0.0004
W21R-4905	39403	290	300	WASTE	FALSE	Intermediate Dwd	<0.6	308.0	#N/A	308.0	8.69	<0.02	0.01	<0.02	0.00005
W21R-4905	39416	370	380	WASTE	FALSE	Intermediate Dwd	<0.6	224.0	#N/A	224.0	8.70	<0.02	<0.01	<0.02	0.00005
W21R-4905	39420	410	420	WASTE	FALSE	Intermediate Dwd	<0.6	195.0	#N/A	195.0	8.29	<0.02	<0.01	<0.02	0.00005
W21R-4905	39434	530	540	WASTE	FALSE	Intermediate Dwd	<0.6	259.0	#N/A	259.0	8.51	<0.02	<0.01	<0.02	0.00005
W21R-4905	39438	570	580	WASTE	FALSE	Intermediate Dwd	<0.6	80.4	#N/A	80.4	8.32	<0.02	<0.01	<0.02	0.00005

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 17 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4905	39442	610	620	WASTE	FALSE	Intermediate Dwd	0.6	27.1	45.2	26.5	8.58	0.04	0.02	0.02	0.0021
W21R-4907	39504	340	350	WASTE	FALSE	Intermediate Dwd	<0.6	298.0	#N/A	298.0	8.91	<0.02	<0.01	<0.02	0.0005
W21R-4907	39511	380	390	WASTE	FALSE	Intermediate Dwd	<0.6	216.0	#N/A	216.0	8.81	<0.02	<0.01	<0.02	0.0005
W21R-4907	39519	460	470	WASTE	FALSE	Intermediate Dwd	1.3	177.0	136.4	176.0	8.56	0.05	0.01	0.04	0.0005
W21R-4907	39523	500	510	WASTE	FALSE	Intermediate Dwd	10.3	226.0	21.9	216.0	8.43	0.34	0.01	0.33	0.0005
W21R-4907	39529	540	550	WASTE	FALSE	Intermediate Dwd	9.4	116.0	12.3	106.0	8.36	0.31	0.01	0.30	0.0005
W21R-4907	39533	580	590	WASTE	FALSE	Intermediate Dwd	<0.6	239.0	#N/A	239.0	8.58	0.02	0.01	<0.02	0.0005
W21R-4908	39587	320	330	WASTE	FALSE	Intermediate Dwd	1.6	297.0	185.6	295.0	8.81	0.06	0.01	0.05	0.00005
W21R-4908	39604	440	450	WASTE	FALSE	Intermediate Dwd	<0.6	255.0	#N/A	255.0	8.82	<0.02	0.01	<0.02	0.0002
W21R-4908	39608	480	490	WASTE	FALSE	Intermediate Dwd	1.6	264.0	165.0	262.0	8.67	0.06	0.01	0.05	0.0001
W21R-4908	39614	520	530	WASTE	FALSE	Intermediate Dwd	<0.6	232.0	#N/A	232.0	8.50	<0.02	<0.01	<0.02	0.0002
W21R-4908	39618	560	570	WASTE	FALSE	Intermediate Dwd	3.8	30.8	8.1	27.0	8.31	0.12	<0.01	0.12	0.0001
W21R-4908	39622	600	610	WASTE	FALSE	Intermediate Dwd	<0.6	271.0	#N/A	271.0	8.97	<0.02	0.01	<0.02	0.0079
W21R-4909	39699	450	460	WASTE	FALSE	Intermediate Dwd	2.2	234.0	106.4	232.0	8.60	0.08	0.01	0.07	0.00005
W21R-4909	39703	490	500	WASTE	FALSE	Intermediate Dwd	9.4	261.0	27.8	252.0	8.52	0.31	0.01	0.30	0.00005
W21R-4909	39709	530	540	WASTE	FALSE	Intermediate Dwd	9.1	105.0	11.5	95.6	8.46	0.30	0.01	0.29	0.0002
W21R-4909	39713	570	580	WASTE	FALSE	Intermediate Dwd	0.9	152.0	168.3	151.0	8.75	0.05	0.02	0.03	0.0005
W21R-4911	39865	280	290	WASTE	FALSE	Intermediate Dwd	<0.6	211.0	#N/A	211.0	8.83	<0.02	<0.01	<0.02	0.0073
W21R-4911	39869	320	330	WASTE	FALSE	Intermediate Dwd	<0.6	132.0	#N/A	132.0	8.75	<0.02	<0.01	<0.02	0.0006
W21R-4911	39882	400	410	WASTE	FALSE	Intermediate Dwd	2.5	249.0	99.5	246.0	8.69	0.09	0.01	0.08	0.0001
W21R-4911	39886	440	450	WASTE	FALSE	Intermediate Dwd	10.6	156.0	14.7	146.0	8.48	0.35	0.01	0.34	0.00005
W21R-4911	39890	480	490	WASTE	FALSE	Intermediate Dwd	10.0	101.0	10.1	90.7	8.61	0.33	0.01	0.32	0.00005
W21R-4911	39896	520	530	WASTE	FALSE	Intermediate Dwd	<0.6	54.8	#N/A	54.8	9.22	0.02	0.01	<0.02	0.00005
W21R-4912	39960	290	300	WASTE	FALSE	Intermediate Dwd	0.6	266.0	443.8	266.0	8.68	0.03	0.01	0.02	0
W21R-4912	39973	370	380	WASTE	FALSE	Intermediate Dwd	<0.6	205.0	#N/A	205.0	8.72	<0.02	<0.01	<0.02	0.0002
W21R-4913	40005	260	270	WASTE	FALSE	Intermediate Dwd	<0.6	178.0	#N/A	178.0	8.94	<0.02	0.01	<0.02	0.0003
W21R-4913	40022	380	390	WASTE	FALSE	Intermediate Dwd	5.9	280.0	47.4	274.0	8.79	0.21	0.02	0.19	0.00005
W21R-4913	40026	420	430	WASTE	FALSE	Intermediate Dwd	1.9	266.0	140.2	264.0	8.63	0.07	0.01	0.06	0.00005
W21R-4913	40030	460	470	WASTE	FALSE	Intermediate Dwd	6.6	75.6	11.5	69.0	8.43	0.22	0.01	0.21	0.00005
W21R-4913	40034	500	510	ORE	FALSE	Intermediate Dwd	0.6	94.1	156.8	93.5	8.91	0.03	0.01	0.02	0.0143
W21R-4913	40040	540	550	WASTE	FALSE	Intermediate Dwd	<0.6	26.8	#N/A	26.8	8.40	0.02	0.02	<0.02	0.0016
W21R-4914	40097	240	250	WASTE	FALSE	Intermediate Dwd	<0.6	291.0	#N/A	291.0	8.52	<0.02	0.01	<0.02	0.00005
W21R-4914	40101	280	290	WASTE	FALSE	Intermediate Dwd	<0.6	110.0	#N/A	110.0	8.57	<0.02	0.01	<0.02	0.00005

Table D–3B. Acid Base Accounting for Intermediate Deadwood (Current Data) (Page 18 of 18)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4914	40114	360	370	WASTE	FALSE	Intermediate Dwd	<0.6	79.2	#N/A	79.2	8.53	<0.02	<0.01	<0.02	0.0003
W21R-4914	40118	400	410	WASTE	FALSE	Intermediate Dwd	8.8	157.0	17.8	148.0	8.30	0.29	0.01	0.28	0.0003
W21R-4914	40122	440	450	WASTE	FALSE	Intermediate Dwd	7.2	119.0	16.5	112.0	8.42	0.24	0.01	0.23	0.0001
W21R-4914	40126	480	490	WASTE	FALSE	Intermediate Dwd	0.6	255.0	425.0	254.0	8.54	0.03	0.01	0.02	0.0003
W21R-4915	40191	240	250	WASTE	FALSE	Intermediate Dwd	1.6	161.0	100.8	160.0	8.48	0.06	0.01	0.05	0.0002
W21R-4915	40195	280	290	WASTE	FALSE	Intermediate Dwd	8.4	250.0	29.8	242.0	8.40	0.28	0.01	0.27	0.00005
W21R-4915	40199	320	330	WASTE	FALSE	Intermediate Dwd	7.2	76.3	10.6	69.1	8.38	0.24	0.01	0.23	0.0015
W21R-4916	40278	250	260	WASTE	FALSE	Intermediate Dwd	<0.6	37.7	#N/A	37.7	8.35	<0.02	<0.01	<0.02	0.0005
W21R-4916	40282	290	300	WASTE	FALSE	Intermediate Dwd	9.4	251.0	26.7	242.0	8.28	0.31	0.01	0.30	0.0002
W21R-4916	40286	330	340	WASTE	FALSE	Intermediate Dwd	5.0	13.6	2.7	8.6	8.36	0.16	<0.01	0.16	0.0002
W21R-4917	40337	20	30	WASTE	FALSE	Intermediate Dwd	<0.6	124.0	#N/A	124.0	8.43	<0.02	0.01	<0.02	0.00005
W21R-4917	40367	300	310	WASTE	FALSE	Intermediate Dwd	9.1	278.0	30.5	268.0	8.56	0.30	0.01	0.29	0.0003
W21R-4917	40373	340	350	WASTE	FALSE	Intermediate Dwd	4.7	15.7	3.3	11.0	8.48	0.15	<0.01	0.15	0.0004
W21R-4918	40416	30	40	WASTE	FALSE	Intermediate Dwd	<0.6	17.8	#N/A	17.8	8.34	0.03	0.02	<0.02	0.0024
W21R-4918	40446	310	320	WASTE	FALSE	Intermediate Dwd	2.8	168.0	60.1	166.0	8.69	0.10	0.01	0.09	0.001
W21R-4918	40455	350	360	WASTE	FALSE	Intermediate Dwd	5.0	101.0	20.3	96.3	8.45	0.17	0.01	0.16	0.0003
W21R-4919	40523	240	250	WASTE	FALSE	Intermediate Dwd	<0.6	251.0	#N/A	251.0	8.85	<0.02	0.01	<0.02	0.0014
W21R-4919	40540	360	370	WASTE	FALSE	Intermediate Dwd	3.8	296.0	77.8	292.0	8.61	0.13	0.01	0.12	0.00005
W21R-4919	40544	400	410	WASTE	FALSE	Intermediate Dwd	9.4	274.0	29.1	264.0	8.48	0.31	0.01	0.30	0.00005
W21R-4919	40548	440	450	WASTE	FALSE	Intermediate Dwd	8.4	77.0	9.2	68.6	8.50	0.27	<0.01	0.27	0.00005

Table D-4A. Acid Base Accounting for Lower Deadwood (Historical Data) (Page 1 of 5)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX2903	25862	350	360	ORE	YES	Lower Dwd	0	355	355	354	0	0.03	0	0	0	0	0.022
FX2902	25911	370	380	ORE	YES	Lower Dwd	9	19	2.1	10	0	0.3	0	0	0	0	0.087
FX3802	64345	590	600	ORE	NO	Lower Dwd	2	19	9.5	17	8.6	0.06	—	—	0.04	0.01	0.024
FX3830	66276	600	610	ORE	NO	Lower Dwd	2	56	0	53	8.5	0.08	0.01	0.01	0.04	0.02	0.012
FX3830	66280	640	650	WASTE	NO	Lower Dwd	2	15	0	14	8.7	0.07	0.01	—	0.05	—	—
FX3831	66337	560	570	ORE	NO	Lower Dwd	6	21	0	15	8.3	0.26	0.06	—	0.15	0.05	0.017
FX3832	66402	610	620	ORE	NO	Lower Dwd	—	28	0	27	8.4	0.03	—	0.01	0.01	—	0.011
FX3832	66410	690	700	WASTE	NO	Lower Dwd	4	9	0	6	8.8	0.15	0.02	—	0.1	0.01	—
FX3907	68967	360	370	ORE	YES	Lower Dwd	—	18	18	17	8.8	0.04	0.01	—	0.02	—	0.016
FX3909	69167	390	400	ORE	YES	Lower Dwd	30	38	1.3	8	7.3	1.1	0.16	—	0.86	0.1	0.055
FX3913	69267	390	400	ORE	YES	Lower Dwd	7	61	8.7	54	8.3	0.24	—	0.01	0.2	0.02	0.016
FX3922	69693	440	450	ORE	YES	Lower Dwd	7	19	2.7	12	8.8	0.26	0.04	0.08	0.08	0.07	0.021
FX4248	80933	510	520	WASTE	YES	Lower Dwd	—	494	494	494	0	—	—	—	—	0.03	—
FX4248	80934	520	530	ORE	YES	Lower Dwd	4	22	5.5	18	0	0.14	0.02	—	0.06	0.06	0.034
FX4249	81018	520	530	ORE	NO	Lower Dwd	2	74	37	72	0	0.08	—	—	0.04	0.03	0.025
FX4249	81019	530	540	ORE	NO	Lower Dwd	7	45	6.4	39	0	0.24	0.03	—	0.17	0.04	0.031
FX4250	81076	500	510	ORE	NO	Lower Dwd	1	194	194	193	0	0.05	—	—	0.01	0.03	0.013
FX4250	81077	510	520	ORE	NO	Lower Dwd	7	12	1.7	4	0	0.28	0.05	0.01	0.17	0.05	0.015
FX4251	81135	490	500	ORE	NO	Lower Dwd	—	488	488	488	0	0.01	—	—	—	0.01	0.018
FX4251	81136	500	510	ORE	NO	Lower Dwd	4	21	5.3	16	0	0.15	0.01	—	0.08	0.05	0.022
FX4406	83229	370	380	WASTE	YES	Lower Dwd	0	228		227	0	0.03	0	0	0	0.03	—
FX4406	83230	380	390	ORE	YES	Lower Dwd	0	303		302	0	0.03	0	0	0	0.03	0.057
FX4406	83231	390	400	WASTE	YES	Lower Dwd	0	320		319	0	0.03	0	0	0	0.03	—
FX4406	83232	400	410	ORE	YES	Lower Dwd	0	40		39	0	0.04	0	0	0	0.03	0.102
FX4406	83233	410	420	ORE	YES	Lower Dwd	5	16		11	0	0.19	0.02	0	0.1	0.07	0.037
FX4406	83234	420	430	WASTE	YES	Lower Dwd	1	72		71	0	0.08	0.04	0	0.01	0.03	—
FX4406	83235	430	440	WASTE	YES	Lower Dwd	1	28		27	0	0.04	0	0	0	0.03	—
FX4410	83367	320	330	ORE	YES	Lower Dwd		373		372	0	0.03			0.01	0.02	0.013
FX4410	83369	340	350	ORE	YES	Lower Dwd	6	32		26	0	0.22	0.02		0.14	0.06	0.042
FX4410	83370	350	360	ORE	YES	Lower Dwd	2	31		28	0	0.08			0.04	0.04	0.141
FX4409	83412	310	320	WASTE	YES	Lower Dwd	0	401		401	0	0.02	0	0	0	0.02	—
FX4409	83413	320	330	WASTE	YES	Lower Dwd	0	638		637	0	0.03	0	0	0.01	0.01	—
FX4409	83414	330	340	ORE	YES	Lower Dwd	4	17		13	0	0.17	0.03	0	0.03	0.11	0.026
FX4415	83457	300	310	WASTE	YES	Lower Dwd		378		378	0	0.03				0.02	—



Table D-4A. Acid Base Accounting for Lower Deadwood (Historical Data) (Page 2 of 5)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4415	83458	310	320	ORE	YES	Lower Dwd	2	37		35	0	0.05			0.01	0.04	0.051
FX4415	83459	320	330	ORE	YES	Lower Dwd	1	26		25	0	0.04				0.03	0.058
FX4414	83506	330	340	ORE	YES	Lower Dwd	5	25		20	0	0.2	0.03		0.1	0.07	0.186
FX4414	83507	340	350	ORE	YES	Lower Dwd	11	35		23	0	0.38	0.02		0.29	0.07	0.112
FX4412	83553	310	320	WASTE	YES	Lower Dwd		260		259	0	0.02				0.02	—
FX4412	83554	320	330	WASTE	YES	Lower Dwd		451		451	0	0.03				0.02	—
FX4412	83555	330	340	ORE	YES	Lower Dwd	4	47		42	0	0.16	0.04		0.04	0.09	0.033
FX4412	83556	340	350	ORE	YES	Lower Dwd	2	81		79	0	0.07	0.02			0.05	0.014
FX4412	83557	350	360	WASTE	YES	Lower Dwd	2	27		26	0	0.05				0.04	—
FX4413	83596	290	300	ORE	YES	Lower Dwd		181		180	0	0.02				0.02	0.041
FX4413	83597	300	310	ORE	YES	Lower Dwd		254		254	0	0.02				0.02	0.073
FX4413	83598	310	320	ORE	YES	Lower Dwd	5	24		19	0	0.21	0.04		0.1	0.07	0.073
FX4413	83599	320	330	ORE	YES	Lower Dwd	16	34		17	0	0.6	0.08		0.45	0.07	0.025
FX4413	83600	330	340	ORE	YES	Lower Dwd	13	26		13	0	0.43			0.36	0.07	0.1
FX4461	83706	330	340	WASTE	YES	Lower Dwd		430		429	0	0.03				0.02	—
FX4461	83707	340	350	WASTE	YES	Lower Dwd	1	421		420	0	0.03		0.01		0.02	—
FX4461	83708	350	360	ORE	YES	Lower Dwd	8	14		6	0	0.24		0.01	0.12	0.11	0.042
FX4461	83709	360	370	ORE	YES	Lower Dwd	18	20		2	0	0.57			0.5	0.06	0.023
FX4461	83710	370	380	ORE	YES	Lower Dwd	11	21		10	0	0.34			0.28	0.06	0.027
FX4458	83754	330	340	WASTE	YES	Lower Dwd	1	510		509	0	0.03		0.01		0.02	—
FX4458	83756	350	360	WASTE	YES	Lower Dwd	2	26		24	0	0.09	0.03		0.02	0.04	—
FX4458	83757	360	370	ORE	YES	Lower Dwd		26		25	0	0.03				0.03	0.022
FX4431	83805	420	430	ORE	NO	Lower Dwd	1	33		31	0	0.04				0.03	0.032
FX4431	83806	430	440	ORE	NO	Lower Dwd		365		365	0	0.02				0.02	0.058
FX4431	83807	440	450	ORE	NO	Lower Dwd	3	67		64	0	0.09	0.01		0.03	0.05	0.031
FX4431	83808	450	460	ORE	NO	Lower Dwd	3	30		27	0	0.11			0.05	0.05	0.06
FX4431	83809	460	470	WASTE	NO	Lower Dwd	2	27		25	0	0.06			0.01	0.05	—
FX4431	83810	470	480	WASTE	NO	Lower Dwd	2	20		18	0	0.05			0.01	0.04	—
FX4431	83811	480	490	ORE	NO	Lower Dwd	3	8		5	0	0.11	0.01		0.02	0.08	0.022
FX4430	83861	440	450	ORE	NO	Lower Dwd		51		51	0	0.04				0.03	0.075
FX4430	83862	450	460	ORE	NO	Lower Dwd		230		229	0	0.02				0.02	0.027
FX4430	83863	460	470	ORE	NO	Lower Dwd	1	29		28	0	0.04	0.01			0.03	0.029
FX4430	83864	470	480	ORE	NO	Lower Dwd	1	50		49	0	0.04				0.04	0.016
FX4430	83865	480	490	WASTE	NO	Lower Dwd	2	27		25	0	0.05			0.01	0.04	—

Table D-4A. Acid Base Accounting for Lower Deadwood (Historical Data) (Page 3 of 5)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4430	83866	490	500	WASTE	NO	Lower Dwd	2	10		8	0	0.08				0.06	—
FX4416	83903	310	320	ORE	YES	Lower Dwd		270		270	0	0.02				0.02	0.045
FX4416	83904	320	330	WASTE	YES	Lower Dwd		468		467	0	0.03		0.01		0.02	—
FX4416	83905	330	340	ORE	YES	Lower Dwd	6	31		25	0	0.23	0.03			0.2	0.023
FX4416	83906	340	350	WASTE	YES	Lower Dwd	6	15		9	0	0.25	0.07			0.18	—
FX4416	83907	350	360	ORE	YES	Lower Dwd	20	14		−7	0	0.7	0.06	0.02		0.62	0.101
FX4416	83908	360	370	ORE	YES	Lower Dwd	11	16		5	0	0.39	0.04	0.03		0.32	0.109
FX4416	83909	370	380	ORE	YES	Lower Dwd	16	14		−2	0	0.54	0.04	0.08		0.42	0.05
FX4418	83954	350	360	ORE	YES	Lower Dwd	5	17		11	0	0.26	0.08			0.17	0.032
FX4418	83955	360	370	ORE	YES	Lower Dwd	1	30		29	0	0.06	0.01			0.05	0.018
FX4418	83956	370	380	ORE	YES	Lower Dwd	1	29		28	0	0.05				0.04	0.019
FX4419	83998	330	340	WASTE	YES	Lower Dwd		557		556	0	0.03				0.02	—
FX4419	84000	350	360	ORE	YES	Lower Dwd	4	24		20	0	0.18	0.04			0.14	0.027
FX4419	84001	360	370	ORE	YES	Lower Dwd	12	34		22	0	0.41	0.03	0.01	0.01	0.35	0.02
FX4420	84046	340	350	ORE	YES	Lower Dwd		254		254	0	0.03				0.03	0.024
FX4420	84047	350	360	ORE	YES	Lower Dwd	6	37		31	0	0.22	0.04		0.1	0.09	0.027
FX4420	84048	360	370	ORE	YES	Lower Dwd	3	36		33	0	0.11	0.02		0.04	0.05	0.024
FX4420	84049	370	380	WASTE	YES	Lower Dwd	3	34		31	0	0.12	0.02		0.07	0.03	—
FX4421	84094	350	360	ORE	YES	Lower Dwd	1	173		172	0	0.03				0.03	0.016
FX4421	84095	360	370	ORE	YES	Lower Dwd		533		532	0	0.03			0.01	0.02	0.02
FX4421	84096	370	380	WASTE	YES	Lower Dwd		322		321	0	0.02				0.02	—
FX4421	84097	380	390	WASTE	YES	Lower Dwd	3	56		53	0	0.13	0.03		0.04	0.06	—
FX4423	84198	390	400	WASTE	YES	Lower Dwd		292		291	0	0.02				0.02	—
FX4423	84199	400	410	ORE	YES	Lower Dwd	4	287		282	0	0.14			0.09	0.05	0.018
FX4423	84200	410	420	ORE	YES	Lower Dwd	16	33		17	0	0.52			0.36	0.16	0.017
FX4423	84201	420	430	WASTE	YES	Lower Dwd	3	48		45	0	0.08			0.02	0.06	—
FX4423	84202	430	440	ORE	YES	Lower Dwd	2	39		37	0	0.07			0.03	0.04	0.015
FX4423	84203	440	450	WASTE	YES	Lower Dwd	4	38		34	0	0.13	0.01		0.07	0.05	—
FX4423	84204	450	460	WASTE	YES	Lower Dwd	3	18		15	0	0.1			0.04	0.05	—
FX4423	84205	460	470	ORE	NO	Lower Dwd	4	18		14	0	0.15	0.02		0.04	0.09	0.02
FX4427	84251	410	420	ORE	YES	Lower Dwd	1	163		162	0	0.07	0.03			0.04	0.027
FX4427	84252	420	430	ORE	NO	Lower Dwd	3	48		44	0	0.12	0.01		0.04	0.06	0.033
FX4427	84253	430	440	ORE	NO	Lower Dwd	2	38		36	0	0.06			0.02	0.04	0.026
FX4427	84254	440	450	WASTE	NO	Lower Dwd	2	66		64	0	0.09	0.01		0.03	0.04	—



Table D-4A. Acid Base Accounting for Lower Deadwood (Historical Data) (Page 4 of 5)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4427	84255	450	460	WASTE	NO	Lower Dwd	5	11		6	0	0.19	0.04		0.1	0.05	—
FX4427	84256	460	470	WASTE	NO	Lower Dwd	3	11		9	0	0.09			0.03	0.04	—
FX4417	84348	330	340	ORE	YES	Lower Dwd	6	39		33	0	0.2	0.02			0.18	0.059
FX4417	84349	340	350	ORE	YES	Lower Dwd	13	33		20	0	0.52	0.09			0.43	0.081
FX4417	84350	350	360	ORE	YES	Lower Dwd	41	18		-23	0	1.5	0.24			1.3	0.099
FX4417	84351	360	370	ORE	YES	Lower Dwd	102	9		-93	0	3.4	0.15			3.3	0.069
FX4425	84402	410	420	ORE	YES	Lower Dwd		498		497	0	0.03			0.01	0.02	0.024
FX4425	84403	420	430	ORE	YES	Lower Dwd	5	43		38	0	0.21	0.05		0.11	0.06	0.076
FX4425	84404	430	440	ORE	NO	Lower Dwd	41	32		-9	0	1.3	0.01		1.2	0.09	0.044
FX4425	84405	440	450	ORE	NO	Lower Dwd	61	26		-35	0	2	0.07		1.8	0.12	0.043
FX4426	84455	410	420	ORE	YES	Lower Dwd	6	163		157	0	0.22	0.03		0.1	0.1	0.02
FX4426	84456	420	430	ORE	YES	Lower Dwd	9	43		34	0	0.32	0.04		0.17	0.1	0.034
FX4426	84458	440	450	WASTE	NO	Lower Dwd	2	24		22	0	0.08	0.01		0.03	0.04	—
FX4426	84459	450	460	WASTE	NO	Lower Dwd	11	15		4	0	0.36	0.01		0.29	0.06	—
FX4422	84606	380	390	WASTE	YES	Lower Dwd		379		378	0	0.03			0.01	0.02	—
FX4422	84607	390	400	ORE	YES	Lower Dwd	4	24		20	0	0.19	0.05		0.04	0.1	0.022
FX4422	84608	400	410	WASTE	YES	Lower Dwd	2	46		44	0	0.06				0.05	—
FX4422	84609	410	420	WASTE	YES	Lower Dwd	2	23		22	0	0.05				0.04	—
FX4422	84610	420	430	WASTE	YES	Lower Dwd	2	15		14	0	0.06			0.02	0.04	—
FX4422	84611	430	440	ORE	YES	Lower Dwd	3	12		9	0	0.14	0.04		0.03	0.07	0.019
FX4422	84612	440	450	ORE	YES	Lower Dwd	1	5		3	0	0.05		0.01		0.03	0.018
FX4424	84659	400	410	ORE	YES	Lower Dwd		376		376	0	0.04	0.02			0.02	0.031
FX4424	84660	410	420	ORE	YES	Lower Dwd		268		267	0	0.03				0.03	0.029
FX4424	84661	420	430	WASTE	YES	Lower Dwd	2	35		33	0	0.12	0.05		0.03	0.05	—
FX4424	84662	430	440	WASTE	YES	Lower Dwd	2	33		32	0	0.06			0.01	0.04	—
FX4424	84663	440	450	WASTE	YES	Lower Dwd	1	31		30	0	0.05	0.01			0.03	—
FX4428	84708	390	400	ORE	YES	Lower Dwd	5	221		216	0	0.16			0.12	0.04	0.023
FX4428	84709	400	410	ORE	YES	Lower Dwd	4	58		54	0	0.17	0.03		0.07	0.07	0.09
FX4428	84710	410	420	ORE	YES	Lower Dwd	4	37		32	0	0.16	0.02		0.09	0.05	0.08
FX4428	84711	420	430	ORE	YES	Lower Dwd	2	20		18	0	0.08			0.05	0.04	0.028
FX4428	84712	430	440	ORE	YES	Lower Dwd	2	22		20	0	0.07			0.03	0.03	0.019
FX4428	84713	440	450	ORE	YES	Lower Dwd	3	24		21	0	0.09			0.05	0.04	0.019
FX4428	84714	450	460	ORE	YES	Lower Dwd	3	13		10	0	0.1			0.05	0.05	0.015
FX4428	84715	460	470	WASTE	YES	Lower Dwd	1	22		21	0	0.04			0.01	0.03	—

Table D-4A. Acid Base Accounting for Lower Deadwood (Historical Data) (Page 5 of 5)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4459	84797	320	330	ORE	YES	Lower Dwd		134		133	0	0.03				0.03	0.049
FX4459	84800	350	360	ORE	YES	Lower Dwd	23	22		-1	0	0.96	0.24		0.67	0.06	0.102
FX4459	84801	360	370	ORE	YES	Lower Dwd	81	3		-78	0	2.7	0.11	0.04	2.4	0.11	0.02
FX4451	85859	590	600	ORE	YES	Lower Dwd	1	160		159	0	0.04				0.03	0.047
FX4451	85860	600	610	WASTE	YES	Lower Dwd	1	573		571	0	0.04		0.03		0.01	—
FX4451	85861	610	620	ORE	YES	Lower Dwd	1	157		156	0	0.04			0.01	0.03	0.047
FX4451	85862	620	630	ORE	YES	Lower Dwd	6	98		92	0	0.36	0.16		0.15	0.05	0.047
FX4451	85863	630	640	ORE	YES	Lower Dwd	27	24		-3	0	1	0.17		0.8	0.07	0.032
FX4462	86052	420	430	ORE	YES	Lower Dwd	14	24		11	0	0.51	0.07		0.39	0.05	0.114
FX4462	86053	430	440	ORE	YES	Lower Dwd	24	17		-7	0	0.85	0.08		0.71	0.06	0.1
FX4460	86179	390	400	ORE	YES	Lower Dwd	1	418		417	0	0.04		0.02		0.02	0.036
FX4460	86180	400	410	ORE	YES	Lower Dwd	1	294		292	0	0.04			0.01	0.03	0.042
FX4460	86181	410	420	ORE	YES	Lower Dwd	5	62		58	0	0.15		0.03	0.06	0.06	0.062
FX4460	86182	420	430	ORE	YES	Lower Dwd	4	30		25	0	0.14			0.11	0.03	0.106
FX4460	86183	430	440	ORE	YES	Lower Dwd	1	86		85	0	0.04				0.03	0.027

Table D–4B. Acid Base Accounting for Lower Deadwood (Current Data) (Page 1 of 3)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4753	28589	740	750	ORE	FALSE	Lower Dwd	<0.6	324	#N/A	324	9.42	<0.02	0.01	<0.02	0.011
W21R-4757	28880	730	740	WASTE	FALSE	Lower Dwd	<0.6	538	#N/A	538	9.48	<0.02	0.01	<0.02	—
W21R-4762	29231	640	650	ORE	FALSE	Lower Dwd	0.6	5	8.3	4.4	8.56	0.02	<0.01	0.02	0.059
W21R-4763	29319	580	590	WASTE	FALSE	Lower Dwd	<0.6	308	#N/A	308	8.42	0.03	0.04	<0.02	0.007
W21R-4765	29511	750	760	ORE	FALSE	Lower Dwd	<0.6	248	#N/A	248	8.71	0.02	0.02	<0.02	0.023
W21R-4765	29515	790	800	WASTE	FALSE	Lower Dwd	1.3	381	292.8	379	8.58	0.05	0.01	0.04	—
W21R-4766	29584	590	600	WASTE	FALSE	Lower Dwd	0.9	24	26.7	23.1	8.64	0.07	0.04	0.03	0.005
W21R-4773	30140	790	800	ORE	FALSE	Lower Dwd	<0.6	20.5	#N/A	20.5	7.86	0.03	0.03	<0.02	0.013
W21R-4774	30221	690	700	ORE	TRUE	Lower Dwd	<0.6	18.8	#N/A	18.8	8.35	0.03	0.02	<0.02	0.016
W21R-4792	31641	780	790	WASTE	TRUE	Lower Dwd	0.3	70.5	-999	70.5	8.45	0.03	0.03	0.01	0.005
W21R-4798	31979	650	660	WASTE	FALSE	Lower Dwd	0.3	41.1	-999	41.1	8.54	0.02	0.01	0.01	—
W21R-4798	31985	690	700	WASTE	FALSE	Lower Dwd	0.3	1.50	-999	1.50	8.58	0.02	0.01	0.01	0.009
W21R-4799	32072	640	650	WASTE	FALSE	Lower Dwd	<0.6	28.7	#N/A	28.7	8.38	0.03	0.03	<0.02	0.011
W21R-4800	32172	680	690	ORE	FALSE	Lower Dwd	1.6	6.7	4.2	5.1	8.86	0.06	0.01	0.05	0.068
W21R-4801	32333	600	610	WASTE	TRUE	Lower Dwd	<0.6	12.4	#N/A	12.4	8.25	0.04	0.06	<0.02	—
W21R-4802	32428	610	620	ORE	FALSE	Lower Dwd	0.3	15.8	-999	15.8	8.05	0.09	0.08	0.01	0.02
W21R-4804	32600	630	640	ORE	FALSE	Lower Dwd	<0.6	22.1	#N/A	22.1	8.58	0.02	0.03	<0.02	0.013
W21R-4805	32701	680	690	ORE	FALSE	Lower Dwd	1.9	8.9	4.7	7.0	8.54	0.09	0.03	0.06	0.185
W21R-4806	32795	680	690	ORE	FALSE	Lower Dwd	0.3	11.3	-999	11.3	8.25	0.04	0.05	0.01	0.026
W21R-4808	32982	660	670	ORE	FALSE	Lower Dwd	<0.6	22.1	#N/A	22.1	8.50	0.04	0.03	<0.02	0.02
W21R-4809	33074	640	650	ORE	FALSE	Lower Dwd	<0.6	71.6	#N/A	71.6	8.96	0.08	0.09	<0.02	0.022
W21R-4810	33168	640	650	WASTE	FALSE	Lower Dwd	<0.6	4.8	#N/A	4.8	8.36	<0.02	0.02	<0.02	—
W21R-4810	33174	680	690	WASTE	FALSE	Lower Dwd	<0.6	14.1	#N/A	14.1	8.57	0.02	0.02	<0.02	0.008
W21R-4811	33359	670	680	ORE	FALSE	Lower Dwd	<0.6	29.5	#N/A	29.5	8.89	0.14	0.13	<0.02	0.038
W21R-4812	33273	700	710	WASTE	FALSE	Lower Dwd	<0.6	114.0	#N/A	114.0	8.43	0.03	0.03	<0.02	0.007
W21R-4813	33456	680	690	ORE	FALSE	Lower Dwd	<0.6	19.8	#N/A	19.8	8.12	0.05	0.04	<0.02	0.053
W21R-4815	33621	730	740	WASTE	FALSE	Lower Dwd	<0.6	414.0	#N/A	414.0	9.20	<0.02	0.02	<0.02	0.004
W21R-4815	33625	770	780	ORE	FALSE	Lower Dwd	0.9	20.5	22.8	19.6	8.63	0.04	0.01	0.03	0.057
W21R-4816	33717	750	760	ORE	TRUE	Lower Dwd	0.9	72.8	80.9	71.9	8.83	0.04	0.01	0.03	0.021
W21R-4818	33812	760	770	ORE	FALSE	Lower Dwd	<0.6	22.0	#N/A	22.0	8.91	0.03	0.03	<0.02	0.054
W21R-4821	34031	720	730	ORE	FALSE	Lower Dwd	<0.6	148.0	#N/A	148.0	8.33	0.04	0.03	<0.02	0.037

Table D–4B. Acid Base Accounting for Lower Deadwood (Current Data) (Page 2 of 3)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4822	34112	640	650	ORE	FALSE	Lower Dwd	0.6	85.4	142.3	84.8	8.72	0.05	0.03	0.02	0.029
W21R-4822	34118	680	690	ORE	FALSE	Lower Dwd	0.6	14.8	24.7	14.2	8.73	0.03	0.01	0.02	0.0367
W21R-4824	34313	720	730	ORE	FALSE	Lower Dwd	0.6	9.4	15.7	8.8	8.06	0.04	0.02	0.02	0.0207
W21R-4826	34502	730	740	ORE	FALSE	Lower Dwd	<0.6	12.0	#N/A	12.0	8.00	0.12	0.12	<0.02	0.0143
W21R-4827	34599	760	770	WASTE	FALSE	Lower Dwd	<0.6	19.3	#N/A	19.3	8.18	<0.02	0.03	<0.02	0.0043
W21R-4857	36214	780	790	WASTE	FALSE	Lower Dwd	<0.6	56.8	#N/A	56.8	8.39	0.03	0.04	<0.02	0.0067
W21R-4862	36469	670	680	WASTE	FALSE	Lower Dwd	0.6	496.0	827.2	496.0	8.46	0.03	0.01	0.02	0.0008
W21R-4862	36478	710	720	WASTE	FALSE	Lower Dwd	1.3	4.8	3.7	3.5	8.23	0.05	0.01	0.04	0.0011
W21R-4865	36647	740	750	WASTE	FALSE	Lower Dwd	0.9	185.0	206.0	185.0	8.86	0.04	0.01	0.03	0.0007
W21R-4865	36651	780	790	WASTE	FALSE	Lower Dwd	2.5	30.1	12.0	27.6	9.14	0.10	0.02	0.08	0.0006
W21R-4866	36740	730	740	WASTE	FALSE	Lower Dwd	0.6	137.0	228.5	137.0	9.11	0.03	0.01	0.02	0.0014
W21R-4868	36909	710	720	WASTE	FALSE	Lower Dwd	<0.6	455.0	#N/A	455.0	9.03	<0.02	0.01	<0.02	0.0011
W21R-4868	36913	750	760	WASTE	FALSE	Lower Dwd	0.6	70.3	117.2	69.7	8.89	0.03	0.01	0.02	0.001
W21R-4891	38343	640	650	ORE	FALSE	Lower Dwd	<0.6	113.0	#N/A	113.0	8.77	0.05	0.05	<0.02	0.0145
W21R-4891	38349	680	690	WASTE	FALSE	Lower Dwd	11.3	3.0	0.3	-8.3	8.47	0.40	0.04	0.36	0.0031
W21R-4892	38430	570	580	WASTE	FALSE	Lower Dwd	<0.6	445.0	#N/A	445.0	8.89	<0.02	0.02	<0.02	0.0024
W21R-4892	38434	610	620	WASTE	FALSE	Lower Dwd	<0.6	11.1	#N/A	11.1	8.04	<0.02	0.02	<0.02	0.0021
W21R-4893	38520	580	590	WASTE	FALSE	Lower Dwd	<0.6	374.0	#N/A	374.0	8.74	0.02	0.02	<0.02	0.004
W21R-4896	38776	680	690	ORE	FALSE	Lower Dwd	<0.6	156.0	#N/A	156.0	8.23	0.06	0.06	<0.02	0.0724
W21R-4896	38783	720	730	WASTE	FALSE	Lower Dwd	<0.6	3.0	#N/A	3.0	8.28	0.03	0.03	<0.02	0.0094
W21R-4898	38969	700	710	WASTE	FALSE	Lower Dwd	<0.6	310.0	#N/A	310.0	8.54	0.02	0.02	<0.02	0.0065
W21R-4900	39121	610	620	WASTE	FALSE	Lower Dwd	<0.6	21.0	#N/A	21.0	8.48	0.04	0.03	<0.02	0.006
W21R-4902	39267	630	640	WASTE	FALSE	Lower Dwd	<0.6	555.0	#N/A	555.0	9.11	<0.02	0.02	<0.02	0.00005
W21R-4905	39452	690	700	ORE	FALSE	Lower Dwd	<0.6	18.1	#N/A	18.1	8.43	0.09	0.10	<0.02	0.0478
W21R-4908	39632	680	690	WASTE	FALSE	Lower Dwd	<0.6	14.4	#N/A	14.4	8.96	0.04	0.04	<0.02	0.0042
W21R-4909	39721	650	660	WASTE	FALSE	Lower Dwd	<0.6	21.2	#N/A	21.2	8.68	0.03	0.02	<0.02	0.0062
W21R-4911	39925	760	770	ORE	FALSE	Lower Dwd	<0.6	14.5	#N/A	14.5	7.89	0.05	0.07	<0.02	0.0278
W21R-4914	40157	720	730	WASTE	FALSE	Lower Dwd	<0.6	34.3	#N/A	34.3	8.91	0.02	0.01	<0.02	0.0029
W21R-4915	40234	600	610	WASTE	FALSE	Lower Dwd	0.6	201.0	335.5	201.0	8.81	0.04	0.02	0.02	0.0014
W21R-4916	40295	370	380	WASTE	FALSE	Lower Dwd	<0.6	164.0	#N/A	164.0	9.09	0.03	0.03	<0.02	0.0012
W21R-4916	40299	410	420	WASTE	FALSE	Lower Dwd	6.3	12.7	2.0	6.4	9.06	0.23	0.03	0.20	0.0005
W21R-4917	40388	460	470	WASTE	FALSE	Lower Dwd	<0.6	529.0	#N/A	529.0	8.97	<0.02	0.01	<0.02	0.0004
W21R-4917	40392	500	510	WASTE	FALSE	Lower Dwd	5.3	14.3	2.7	9.0	8.71	0.19	0.02	0.17	0.0018

Table D–4B. Acid Base Accounting for Lower Deadwood (Current Data) (Page 3 of 3)															
Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4918	40473	510	520	WASTE	FALSE	Lower Dwd	0.6	135.0	224.8	134.0	8.95	0.03	0.01	0.02	0.002
W21R-4918	40477	550	560	WASTE	FALSE	Lower Dwd	2.8	6.9	2.5	4.1	8.94	0.12	0.03	0.09	0.0023
W21R-4919	40552	480	490	WASTE	FALSE	Lower Dwd	1.9	229.0	120.4	227.0	9.27	0.08	0.02	0.06	0.0006
W21R-4919	40558	520	530	WASTE	FALSE	Lower Dwd	<0.6	213.0	#N/A	213.0	8.65	<0.02	0.01	<0.02	0.00005



Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 1 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3083	14377	50	60	ORE	YES	Monzonite	6.6	0	0	-7	6.6	0.21	0	0	0	0	0.013
FX3084	14407	50	60	ORE	YES	Monzonite	8.4	1	0.1	-7	6.6	0.27	0	0	0	0	0.026
FX3084	14408	60	70	ORE	YES	Monzonite	8.8	0	0	-9	6.7	0.28	0	0	0	0	0.014
FX3086	14528	20	30	ORE	YES	Monzonite	2.5	2	0.8	-1	6.4	0.08	0	0	0	0	0.026
FX3086	14529	30	40	ORE	YES	Monzonite	1.6	1	0.6	-1	6.7	0.05	0	0	0	0	0.016
FX3086	14530	40	50	ORE	YES	Monzonite	1.6	1	0.6	-1	6.3	0.05	0	0	0	0	0.013
FX3087	14558	0	10	ORE	YES	Monzonite	25.2	0	0	-2	6.4	0.07	0	0	0	0	0.015
FX3077	14653	50	60	ORE	YES	Monzonite	0.3	1	3.3	1	7	0.01	0	0	0	0	0.015
FX3077	14655	70	80	ORE	YES	Monzonite	5.9	1	0.2	-5	-	0.19	0	0	0	0	0.016
FX3077	14658	100	110	ORE	YES	Monzonite	11.3	0	0	-11	6.6	0.36	0	0	0	0	0.063
FX3065	14774	60	70	ORE	YES	Monzonite	—	—	—	—	—	0.37	0	0	0	0	0.018
FX3065	14775	70	80	ORE	YES	Monzonite	—	—	—	—	—	0.2	0	0	0	0	0.014
FX3065	14776	80	90	ORE	YES	Monzonite	—	—	—	—	—	1.63	0	0	0	0	0.05
FX3068	14880	220	230	ORE	NO	Monzonite	15.3	0	0	-15	6.3	0.49	0	0	0	0	0.032
FX3344	49152	460	470	WASTE	NO	Monzonite	0	6	6	7	0	0.03	0.01	—	—	—	0.009
FX3346	49243	70	80	WASTE	YES	Monzonite	0	28	28	28	0	—	—	—	—	—	—
FX3399	49342	260	270	ORE	NO	Monzonite	6	17	2.8	11	8.4	0.19	—	—	0.16	0.01	0.014
FX3399	49350	340	350	WASTE	NO	Monzonite	16	14	0.9	-2	8.5	0.55	0.03	0.47	0.02	0.03	—
FX3399	49353	370	380	WASTE	NO	Monzonite	8	3	0.4	-5	7.8	0.26	0.02	—	0.22	0.02	—
FX3399	49364	480	490	WASTE	NO	Monzonite	2	21	10.5	19	8	0.08	—	—	0.04	0.02	—
FX3348	49389	230	240	WASTE	NO	Monzonite	0	6	6	6	0	0.02	—	—	—	—	—
FX3349	49449	180	190	WASTE	NO	Monzonite	3	14	4.7	11	0	0.11	0.02	—	0.09	—	—
FX3406	49668	270	280	WASTE	NO	Monzonite	0	9	9	10	8.5	0.04	0.01	—	0.01	0.01	—
FX3406	49679	380	390	WASTE	NO	Monzonite	9	10	1.1	1	8.4	0.34	0.05	—	0.27	0.02	—
FX3353	49716	250	260	WASTE	NO	Monzonite	0	7	7	8	0	0.05	0.02	—	0.01	—	—
FX3354	49775	190	200	WASTE	NO	Monzonite	1	32	32	31	0	0.04	0.01	—	0.02	—	—
FX3356	49909	230	240	WASTE	NO	Monzonite	0	23	23	24	0	0.03	0.01	—	—	—	—
FX3363	50415	240	250	WASTE	YES	Monzonite	5	12	2.4	7	0	0.18	0.03	—	0.12	0.03	—
FX3365	50543	220	230	ORE	YES	Monzonite	3	143	47.7	139	8.6	0.12	0.01	—	0.1	-	0.042
FX3396	50554	70	80	WASTE	YES	Monzonite	0	3	3	3	7.3	—	—	—	—	—	—
FX3374	51156	500	510	WASTE	NO	Monzonite	0	21	21	20	8.5	0.03	—	—	0.02	—	—
FX3374	51166	600	610	ORE	NO	Monzonite	0	17	17	16	8.9	0.02	—	—	0.02	—	0.025
FX3375	51221	500	510	WASTE	NO	Monzonite	0	16	16	16	9.2	0.02	—	—	0.01	—	—
FX3396	51299	490	500	WASTE	NO	Monzonite	5	20	4	16	8.5	0.16	0.02	—	0.12	0.02	—

Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 2 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3382	51585	240	250	WASTE	NO	Monzonite	1	13	13	12	8.3	0.06	0.02	—	0.02	—	—
FX3384	51688	270	280	WASTE	NO	Monzonite	10	13	1.3	3	8.5	0.33	0.02	0.02	0.26	0.03	—
FX3384	51699	380	390	WASTE	NO	Monzonite	2	3	1.5	1	8.6	0.08	0.01	—	0.06	—	—
FX3385	51735	240	250	WASTE	NO	Monzonite	5	18	3.6	13	8.8	0.18	0.01	0.02	0.14	0.01	—
FX3385	51746	350	360	WASTE	NO	Monzonite	0	14	14	15	8.6	0.04	—	—	0.01	0.01	—
FX3385	51757	460	470	WASTE	NO	Monzonite	0	6	6	6	8.8	0.02	—	—	—	—	—
FX3397	52006	480	490	WASTE	NO	Monzonite	0	26	26	25	8.8	0.03	—	—	0.02	—	—
FX3398	52101	400	410	WASTE	NO	Monzonite	0	113	113	112	8.5	0.02	—	—	0.01	—	—
FX3411	52483	320	330	WASTE	NO	Monzonite	0	70	70	71	8.2	—	—	—	—	—	—
FX3413	52591	400	410	WASTE	NO	Monzonite	0	14	14	15	8.1	—	—	—	—	—	—
FX3416	52750	490	500	ORE	NO	Monzonite	0	29	29	30	8.4	0.04	—	—	0.02	—	0.034
FX3830	66256	400	410	WASTE	YES	Monzonite	—	60	0	60	8.8	—	—	—	—	—	—
FX3832	66378	370	380	WASTE	YES	Monzonite	1	232	0	231	8.5	0.04	—	—	0.03	—	—
FX3832	66382	410	420	WASTE	YES	Monzonite	—	83	0	83	8.6	—	—	—	—	—	—
FX3832	66406	650	660	WASTE	NO	Monzonite	9	13	0	4	8.8	0.3	0.02	0.02	0.26	0.02	—
FX3834	66507	360	370	WASTE	YES	Monzonite	2	13	0	11	8.9	0.07	-	0.01	0.05	0.01	0.01
FX3834	66529	580	590	WASTE	NO	Monzonite	5	12	0	7	8.8	0.18	0.02	0.01	0.12	0.02	—
FX3845	67131	400	410	WASTE	YES	Monzonite	—	17	0	17	8.5	—	—	—	—	—	—
FX3846	67180	390	400	WASTE	NO	Monzonite	—	72	0	72	8.8	—	—	—	—	—	—
FX3849	67294	230	240	WASTE	NO	Monzonite	—	11	11	10	8.8	0.02	—	—	0.02	—	—
FX3849	67295	240	250	WASTE	NO	Monzonite	—	4	4	3	8.9	0.02	—	—	0.02	—	—
FX3849	67296	250	260	WASTE	NO	Monzonite	—	12	12	11	8.5	0.02	0.01	—	0.01	—	—
FX3849	67297	260	270	WASTE	NO	Monzonite	—	13	13	12	8.7	0.02	—	—	0.02	—	—
FX3849	67298	270	280	WASTE	NO	Monzonite	—	12	12	11	8.9	0.02	—	—	0.02	—	—
FX3849	67299	280	290	ORE	NO	Monzonite	—	12	12	11	8.7	—	—	—	—	—	0.016
FX3850	67323	220	230	WASTE	NO	Monzonite	—	53	53	52	8.5	0.01	—	0.01	—	—	—
FX3850	67324	230	240	WASTE	NO	Monzonite	—	13	13	12	7.9	0.01	—	—	—	—	—
FX3850	67325	240	250	WASTE	NO	Monzonite	—	10	10	10	9	0.02	0.01	—	—	0.01	—
FX3850	67326	250	260	WASTE	NO	Monzonite	—	2	2	1	8.3	0.03	0.01	—	0.02	—	—
FX3850	67327	260	270	ORE	NO	Monzonite	—	2	2	1	8.5	0.05	0.02	—	0.02	0.01	0.027
FX3850	67328	270	280	WASTE	NO	Monzonite	—	5	5	4	8.4	0.02	0.01	—	0.01	—	—
FX3850	67329	280	290	WASTE	NO	Monzonite	—	12	12	12	9.3	0.02	—	—	0.01	—	—
FX3850	67330	290	300	WASTE	NO	Monzonite	—	2	2	2	8.6	0.02	—	—	0.01	—	—
FX3852	67365	340	350	WASTE	NO	Monzonite	—	17	17	16	8.7	0.02	0.01	—	0.01	—	—

Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 3 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3852	67366	350	360	WASTE	NO	Monzonite	—	9	9	9	9	0.02	—	0.02	—	—	0.009
FX3852	67367	360	370	WASTE	NO	Monzonite	—	12	12	12	9.3	0.02	—	0.01	—	—	—
FX3852	67368	370	380	WASTE	NO	Monzonite	—	8	8	7	9.1	0.02	—	0.01	—	—	0.01
FX3852	67369	380	390	ORE	NO	Monzonite	—	5	5	4	8.9	0.02	—	0.02	—	—	0.013
FX3852	67370	390	400	ORE	NO	Monzonite	—	7	7	7	9.2	0.02	—	0.01	—	—	0.011
FX3884	67413	220	230	WASTE	NO	Monzonite	—	123	0	123	8.5	0.01	—	0.01	—	—	—
FX3884	67414	230	240	WASTE	NO	Monzonite	1	17	0	15	8.6	0.05	—	—	0.01	0.03	—
FX3884	67415	240	250	WASTE	NO	Monzonite	—	11	0	10	8.7	0.03	—	—	—	0.02	—
FX3884	67416	250	260	WASTE	NO	Monzonite	—	11	0	10	8.8	0.02	—	—	0.02	—	—
FX3884	67417	260	270	WASTE	NO	Monzonite	—	15	0	14	9	0.02	0.01	—	—	—	—
FX3884	67418	270	280	WASTE	NO	Monzonite	—	15	0	15	9.1	0.01	—	—	—	—	—
FX3884	67419	280	290	WASTE	NO	Monzonite	3	22	0	18	9.1	0.14	0.02	—	0.11	—	—
FX3884	67420	290	300	WASTE	NO	Monzonite	1	18	0	17	9.1	0.04	—	0.02	0.03	—	—
FX3884	67421	300	310	WASTE	NO	Monzonite	—	14	0	13	9.2	0.02	—	0.02	—	—	—
FX3884	67422	310	320	WASTE	NO	Monzonite	1	16	0	15	8.9	0.05	0.02	—	0.03	—	—
FX3884	67423	320	330	WASTE	NO	Monzonite	1	16	0	15	9.2	0.06	0.01	—	0.04	—	—
FX3884	67424	330	340	WASTE	NO	Monzonite	—	16	0	15	9.1	0.02	—	—	0.02	—	—
FX3884	67425	340	350	WASTE	NO	Monzonite	—	12	0	11	8.9	0.03	0.01	—	0.02	—	—
FX3884	67426	350	360	WASTE	NO	Monzonite	—	11	0	11	8.9	0.01	—	—	—	—	—
FX3884	67427	360	370	WASTE	NO	Monzonite	—	11	0	11	9	0.01	—	—	—	—	—
FX3884	67428	370	380	WASTE	NO	Monzonite	1	17	0	16	9.1	0.04	0.01	—	0.03	—	—
FX3884	67429	380	390	WASTE	NO	Monzonite	—	18	0	18	9.1	0.03	—	0.01	0.02	—	—
FX3884	67430	390	400	WASTE	NO	Monzonite	—	13	0	13	9.1	0.01	—	0.01	—	—	—
FX3886	67455	240	250	WASTE	NO	Monzonite	—	69	0	68	8.9	0.02	—	0.02	—	—	—
FX3886	67456	250	260	WASTE	NO	Monzonite	—	11	0	11	8.7	—	—	—	—	—	—
FX3886	67457	260	270	WASTE	NO	Monzonite	—	11	0	11	8.9	0.01	—	—	—	—	—
FX3886	67458	270	280	WASTE	NO	Monzonite	1	15	0	13	9.1	0.04	—	—	0.04	—	—
FX3886	67459	280	290	WASTE	NO	Monzonite	—	11	0	11	9.3	0.02	—	0.01	—	—	—
FX3886	67460	290	300	WASTE	NO	Monzonite	—	15	0	14	9.1	0.02	0.01	0.01	—	—	—
FX3867	67491	0	10	ORE	YES	Monzonite	1	2	0	1	7.2	0.05	0.01	—	—	0.04	0.015
FX3867	67492	10	20	WASTE	YES	Monzonite	4	10	0	7	7.5	0.15	0.04	—	—	0.11	—
FX3867	67493	20	30	ORE	YES	Monzonite	5	3	0	−2	7.7	0.18	0.02	—	0.01	0.15	0.015
FX3867	67494	30	40	WASTE	YES	Monzonite	2	7	0	5	8	0.08	0.01	—	0.02	0.05	—
FX3867	67495	40	50	WASTE	YES	Monzonite	2	7	0	6	8.3	0.07	0.02	—	—	0.04	—



Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 4 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3867	67496	50	60	WASTE	YES	Monzonite	2	7	0	5	8.1	0.08	0.01	—	0.02	0.04	—
FX3867	67514	230	240	WASTE	NO	Monzonite	—	7	0	7	8.5	0.02	—	—	0.01	—	—
FX3867	67515	240	250	WASTE	NO	Monzonite	1	5	0	4	8.3	0.05	—	—	—	0.04	—
FX3867	67516	250	260	WASTE	NO	Monzonite	—	5	0	5	8.3	0.03	—	—	—	0.01	—
FX3867	67517	260	270	WASTE	NO	Monzonite	—	9	0	9	8.8	0.02	—	—	0.01	—	—
FX3869	67548	0	10	WASTE	YES	Monzonite	—	2	1	1	0	0.03	—	—	0.01	0.01	—
FX3869	67549	10	20	WASTE	YES	Monzonite	2	1	1.5	-1	0	0.08	0.03	—	—	0.06	—
FX3869	67550	20	30	WASTE	YES	Monzonite	7	2	0.3	-5	0	0.26	0.04	—	0.02	0.2	—
FX3869	67551	30	40	WASTE	YES	Monzonite	5	2	0.3	-2	0	0.19	0.04	—	0.04	0.11	—
FX3865	67561	0	10	WASTE	YES	Monzonite	—	4	0	3	7.6	0.05	0.02	—	0.03	—	—
FX3865	67562	10	20	WASTE	YES	Monzonite	—	2	0	2	8.1	0.03	0.02	—	0.01	—	—
FX3865	67563	20	30	WASTE	YES	Monzonite	—	2	0	2	8.2	0.03	0.02	—	—	—	—
FX3865	67564	30	40	WASTE	YES	Monzonite	—	2	0	1	8.3	0.03	0.02	—	—	—	—
FX3865	67565	40	50	WASTE	YES	Monzonite	—	2	0	1	8.2	0.04	0.02	—	0.01	—	—
FX3865	67566	50	60	WASTE	YES	Monzonite	—	3	0	3	8.2	0.01	—	—	—	—	—
FX3865	67567	60	70	WASTE	YES	Monzonite	—	2	0	1	8	0.02	0.01	—	—	—	—
FX3865	67568	70	80	WASTE	YES	Monzonite	3	2	0	-1	8	0.12	0.02	—	0.04	0.05	—
FX3865	67582	210	220	WASTE	NO	Monzonite	2	5	0	3	7.9	0.08	0.02	—	0.02	0.03	—
FX3865	67583	220	230	WASTE	NO	Monzonite	—	3	0	2	8	0.03	—	—	—	0.02	—
FX3865	67584	230	240	WASTE	NO	Monzonite	2	7	0	5	8.6	0.08	0.01	—	0.02	0.05	—
FX3865	67585	240	250	WASTE	NO	Monzonite	2	10	0	8	8.6	0.07	0.02	—	0.03	0.03	—
FX3866	67586	0	10	WASTE	YES	Monzonite	1	7	0	6	7.2	0.03	0.02	—	0.02	0.02	—
FX3866	67587	10	20	WASTE	YES	Monzonite	2	2	0	1	7.8	0.08	0.03	—	0.02	0.03	—
FX3866	67588	20	30	WASTE	YES	Monzonite	4	3	0	-1	7.8	0.17	0.04	—	0.06	0.07	—
FX3866	67589	30	40	WASTE	YES	Monzonite	—	2	0	1	7.9	0.04	0.02	—	0.02	—	—
FX3866	67590	40	50	WASTE	YES	Monzonite	—	2	0	1	7.8	0.05	0.02	—	0.02	—	—
FX3866	67591	50	60	WASTE	YES	Monzonite	—	3	0	2	7.8	0.04	0.01	—	0.01	—	—
FX3866	67592	60	70	WASTE	YES	Monzonite	—	5	0	4	7.8	0.04	0.02	0.02	—	—	—
FX3866	67593	70	80	WASTE	YES	Monzonite	4	2	0	-2	7.5	0.16	0.04	—	0.06	0.06	—
FX3866	67608	220	230	WASTE	NO	Monzonite	6	9	0	3	8.4	0.24	0.06	—	0.09	0.09	—
FX3866	67609	230	240	WASTE	NO	Monzonite	3	5	0	2	8.7	0.15	0.04	—	0.06	0.04	—
FX3866	67610	240	250	WASTE	NO	Monzonite	3	5	0	2	8.7	0.15	0.04	—	0.06	0.04	—
FX3855	67611	0	10	WASTE	YES	Monzonite	1	—	0	-1	6.8	0.06	0.02	—	0.04	—	—
FX3855	67612	10	20	WASTE	YES	Monzonite	—	1	1	1	7.5	0.04	0.02	—	0.02	—	0.008

Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 5 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3855	67613	20	30	ORE	YES	Monzonite	1	—	0	−1	7.6	0.04	0.01	—	0.03	—	0.011
FX3855	67614	30	40	WASTE	YES	Monzonite	2	1	0.5	0	7.6	0.08	0.03	—	0.05	—	—
FX3855	67615	40	50	WASTE	YES	Monzonite	2	1	0.5	0	7.6	0.07	0.02	—	0.05	—	—
FX3855	67616	50	60	WASTE	YES	Monzonite	3	1	0.3	−2	7.6	0.12	0.02	—	0.09	—	—
FX3855	67617	60	70	WASTE	YES	Monzonite	3	2	0.7	−1	7.7	0.15	0.04	0.01	0.07	0.03	—
FX3855	67618	70	80	ORE	YES	Monzonite	4	4	1	0	7.7	0.15	0.02	0.01	0.09	0.03	0.014
FX3855	67619	80	90	WASTE	YES	Monzonite	3	2	0.7	−1	7.8	0.12	0.02	—	0.1	—	—
FX3855	67620	90	100	WASTE	YES	Monzonite	2	3	1.5	1	7.8	0.08	0.02	—	0.03	0.03	—
FX3855	67621	100	110	ORE	YES	Monzonite	3	3	1	0	7.7	0.12	0.02	—	0.08	0.02	0.013
FX3855	67622	110	120	WASTE	YES	Monzonite	—	4	4	3	7.9	0.02	—	—	0.01	0.01	—
FX3855	67623	120	130	WASTE	YES	Monzonite	2	3	1.5	1	7.9	0.09	0.02	—	0.08	—	—
FX3855	67624	130	140	WASTE	YES	Monzonite	—	3	3	3	8	0.02	—	—	0.02	—	—
FX3855	67625	140	150	WASTE	YES	Monzonite	—	5	5	4	8.1	0.02	—	—	0.02	—	—
FX3856	67641	0	10	WASTE	YES	Monzonite	2	2	1	1	7.3	0.06	—	—	0.04	0.01	—
FX3856	67642	10	20	WASTE	YES	Monzonite	1	3	3	2	7.5	0.04	0.01	—	0.03	—	—
FX3856	67643	20	30	WASTE	YES	Monzonite	—	2	2	2	7.6	0.03	0.02	—	0.01	—	—
FX3856	67644	30	40	WASTE	YES	Monzonite	—	2	2	1	7.6	0.02	—	—	0.01	0.01	—
FX3856	67645	40	50	WASTE	YES	Monzonite	—	—	0	0	7.7	0.02	—	—	0.02	—	—
FX3856	67646	50	60	WASTE	YES	Monzonite	—	2	2	1	7.9	0.04	0.01	—	0.02	0.01	—
FX3856	67647	60	70	WASTE	YES	Monzonite	—	2	2	2	7.8	0.02	—	0.01	—	0.01	—
FX3856	67648	70	80	WASTE	YES	Monzonite	—	2	2	2	7.8	0.02	—	—	—	—	—
FX3856	67649	80	90	WASTE	YES	Monzonite	—	2	2	2	7.8	0.02	—	0.01	—	—	—
FX3856	67650	90	100	WASTE	YES	Monzonite	—	2	2	1	8.1	0.02	—	0.02	—	—	—
FX3856	67651	100	110	WASTE	YES	Monzonite	—	2	2	2	8	0.02	0.01	—	0.01	—	—
FX3856	67652	110	120	WASTE	YES	Monzonite	—	2	2	2	7.7	0.04	0.02	—	0.02	—	—
FX3856	67653	120	130	WASTE	YES	Monzonite	—	5	5	4	7.8	0.02	—	—	0.01	—	—
FX3856	67654	130	140	WASTE	YES	Monzonite	—	5	5	4	8.1	0.02	—	—	—	—	—
FX3856	67655	140	150	WASTE	YES	Monzonite	—	3	3	3	8.3	0.02	—	0.01	—	0.01	—
FX3858	67671	0	10	WASTE	YES	Monzonite	1	—	0	−1	7.2	0.06	0.01	—	0.04	—	0.008
FX3858	67672	10	20	WASTE	YES	Monzonite	2	2	1	0	7.7	0.12	0.04	—	0.08	—	—
FX3858	67673	20	30	WASTE	YES	Monzonite	1	2	2	1	7.4	0.06	0.02	—	0.04	—	—
FX3858	67674	30	40	WASTE	YES	Monzonite	—	4	4	3	7.7	0.03	0.01	—	0.02	—	—
FX3858	67675	40	50	WASTE	YES	Monzonite	—	2	2	2	8	0.02	—	—	0.02	—	—
FX3858	67677	60	70	WASTE	YES	Monzonite	—	2	2	2	7.9	0.02	0.01	—	0.01	—	—

Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 6 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3858	67678	70	80	WASTE	YES	Monzonite	1	2	2	1	8	0.06	0.01	—	0.02	0.02	—
FX3858	67679	80	90	WASTE	YES	Monzonite	—	3	3	3	8.1	0.02	—	—	0.02	—	—
FX3858	67680	90	100	WASTE	YES	Monzonite	—	2	2	2	7.8	0.04	0.02	—	0.02	0.01	—
FX3858	67681	100	110	WASTE	YES	Monzonite	—	6	6	5	8.1	0.04	0.01	—	0.02	—	—
FX3858	67694	230	240	WASTE	NO	Monzonite	3	14	4.7	10	8.2	0.11	0.01	—	0.09	0.01	—
FX3858	67695	240	250	WASTE	NO	Monzonite	1	8	8	7	8.5	0.04	0.01	—	0.02	0.01	—
FX3859	67696	0	10	WASTE	YES	Monzonite	2	4	0	2	7.6	0.07	0.01	—	0.04	0.02	—
FX3859	67698	20	30	WASTE	YES	Monzonite	1	11	0	10	8.4	0.04	—	—	—	0.03	—
FX3859	67699	30	40	WASTE	YES	Monzonite	—	4	0	3	8.3	0.02	—	—	—	0.01	—
FX3859	67700	40	50	WASTE	YES	Monzonite	1	11	0	10	7.7	0.04	0.01	—	0.02	0.01	—
FX3860	67726	0	10	WASTE	YES	Monzonite	2	3	1.5	1	7	0.12	0.04	—	0.06	0.01	0.01
FX3860	67727	10	20	ORE	YES	Monzonite	—	2	2	2	7.1	0.04	0.01	—	0.02	—	0.011
FX3860	67728	20	30	WASTE	YES	Monzonite	—	3	3	2	7.7	0.04	0.01	—	0.01	0.01	—
FX3860	67729	30	40	WASTE	YES	Monzonite	—	2	2	1	7.8	0.04	0.01	—	0.02	—	—
FX3860	67730	40	50	WASTE	YES	Monzonite	—	3	3	2	7.7	0.02	—	0.01	0.01	—	—
FX3860	67731	50	60	ORE	YES	Monzonite	1	2	2	1	7.5	0.04	—	—	0.04	—	0.028
FX3860	67732	60	70	ORE	YES	Monzonite	—	2	2	1	7.7	0.02	0.01	—	—	—	0.013
FX3860	67733	70	80	WASTE	YES	Monzonite	—	3	3	3	8.1	0.02	—	—	—	—	—
FX3860	67734	80	90	WASTE	YES	Monzonite	—	3	3	3	8.3	0.02	—	—	—	—	—
FX3860	67736	100	110	WASTE	YES	Monzonite	4	3	0.8	−1	7.1	0.15	0.02	—	0.12	—	—
FX3860	67748	220	230	ORE	NO	Monzonite	2	8	4	5	8.1	0.12	0.04	—	0.08	—	0.013
FX3860	67749	230	240	WASTE	NO	Monzonite	2	8	4	5	8.5	0.1	0.02	—	0.07	0.01	—
FX3860	67750	240	250	WASTE	NO	Monzonite	—	2	2	1	7	0.03	—	0.01	0.02	—	—
FX3861	67751	0	10	WASTE	YES	Monzonite	—	1	1	1	6	0.04	0.02	—	0.03	—	0.01
FX3861	67752	10	20	ORE	YES	Monzonite	—	2	2	1	7.5	0.04	0.01	—	0.03	—	0.015
FX3861	67753	20	30	ORE	YES	Monzonite	1	2	2	1	7.3	0.06	0.02	—	0.04	—	0.012
FX3861	67754	30	40	WASTE	YES	Monzonite	—	2	2	1	7.5	0.04	0.02	—	0.03	—	0.01
FX3861	67755	40	50	WASTE	YES	Monzonite	—	2	2	1	7.4	0.22	0.2	—	0.03	—	—
FX3861	67756	50	60	WASTE	YES	Monzonite	2	2	1	0	8.2	0.09	0.02	—	0.04	0.03	—
FX3861	67757	60	70	WASTE	YES	Monzonite	2	2	1	0	8	0.08	0.02	0.02	0.02	0.02	—
FX3861	67758	70	80	WASTE	YES	Monzonite	2	2	1	1	7.5	0.1	0.04	—	0.05	0.01	—
FX3861	67759	80	90	WASTE	YES	Monzonite	—	2	2	2	8	0.02	—	—	—	—	—
FX3861	67760	90	100	WASTE	YES	Monzonite	—	5	5	4	8.1	0.04	—	—	0.02	0.01	—
FX3861	67761	100	110	ORE	YES	Monzonite	1	3	3	1	7.8	0.06	0.02	—	0.02	0.02	0.029

Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 7 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3861	67774	230	240	WASTE	NO	Monzonite	1	11	11	10	8.8	0.06	0.02	—	0.03	0.01	—
FX3861	67775	240	250	WASTE	NO	Monzonite	2	2	1	1	7.9	0.08	0.03	—	0.03	0.02	—
FX3862	67776	0	10	WASTE	YES	Monzonite	1	3	3	2	6.5	0.05	0.02	-	0.04	—	—
FX3862	67777	10	20	WASTE	YES	Monzonite	—	5	5	4	7.7	0.02	—	0.01	—	—	—
FX3862	67778	20	30	WASTE	YES	Monzonite	—	8	8	7	8	0.02	—	—	—	—	—
FX3862	67779	30	40	WASTE	YES	Monzonite	—	3	3	3	8.1	0.02	0.01	—	0.01	—	—
FX3862	67780	40	50	WASTE	YES	Monzonite	—	3	3	3	8.2	0.01	—	—	—	—	—
FX3862	67781	50	60	WASTE	YES	Monzonite	3	3	1	0	7.9	0.1	0.01	—	0.03	0.05	—
FX3864	67816	0	10	WASTE	YES	Monzonite	—	2	0	1	7.3	0.02	0.01	—	0.01	—	—
FX3864	67817	10	20	WASTE	YES	Monzonite	—	2	0	1	7.6	0.04	0.01	—	0.01	0.01	—
FX3864	67818	20	30	WASTE	YES	Monzonite	—	1	0	1	7.7	0.03	—	—	0.02	—	—
FX3864	67819	30	40	WASTE	YES	Monzonite	—	2	0	1	7.7	0.02	—	—	0.02	—	—
FX3864	67820	40	50	WASTE	YES	Monzonite	—	2	0	1	8.2	0.03	—	—	—	0.02	—
FX3864	67821	50	60	WASTE	YES	Monzonite	2	1	0	-1	8	0.08	0.02	—	—	0.06	—
FX3874	67846	0	10	WASTE	YES	Monzonite	2	3	0	2	7.6	0.07	0.02	—	0.05	—	—
FX3874	67847	10	20	WASTE	YES	Monzonite	2	4	0	3	8.3	0.08	0.02	—	0.06	—	—
FX3874	67848	20	30	WASTE	YES	Monzonite	1	3	0	2	8.3	0.04	—	—	0.03	—	—
FX3874	67849	30	40	WASTE	YES	Monzonite	—	2	0	1	8.2	0.04	0.02	—	0.03	—	0.01
FX3874	67850	40	50	WASTE	YES	Monzonite	—	3	0	2	8	0.02	—	—	—	—	—
FX3874	67851	50	60	WASTE	YES	Monzonite	—	3	0	2	7.8	0.02	—	—	0.01	—	—
FX3874	67852	60	70	WASTE	YES	Monzonite	2	3	0	1	7.9	0.07	0.02	—	0.05	—	—
FX3874	67853	70	80	WASTE	YES	Monzonite	2	1	0	-1	8.2	0.07	0.01	—	0.05	—	—
FX3874	67854	80	90	WASTE	YES	Monzonite	—	4	0	4	8.2	0.04	0.02	—	0.02	—	—
FX3874	67855	90	100	WASTE	YES	Monzonite	—	2	0	2	7.9	0.02	—	—	0.01	—	—
FX3874	67856	100	110	WASTE	YES	Monzonite	1	3	0	2	8.5	0.05	0.02	—	0.03	—	—
FX3874	67869	230	240	WASTE	NO	Monzonite	—	10	0	9	8.2	0.01	—	—	—	—	—
FX3874	67870	240	250	WASTE	NO	Monzonite	—	4	0	3	8.3	0.03	—	—	0.03	—	—
FX3875	67878	70	80	WASTE	YES	Monzonite	—	5	0	4	7.7	0.03	—	0.01	0.02	—	—
FX3875	67879	80	90	WASTE	YES	Monzonite	—	3	0	2	8	0.02	—	0.01	0.01	—	—
FX3876	67886	0	10	WASTE	YES	Monzonite	2	2	0	0	6.5	0.08	0.01	—	0.06	0.01	—
FX3876	67887	10	20	WASTE	YES	Monzonite	1	2	0	1	6.8	0.06	0.02	—	0.03	0.01	—
FX3876	67888	20	30	WASTE	YES	Monzonite	—	2	0	1	7.7	0.04	0.01	—	0.02	0.01	—
FX3876	67889	30	40	WASTE	YES	Monzonite	3	1	0	-2	7.2	0.12	0.03	—	0.04	0.05	—
FX3876	67890	40	50	WASTE	YES	Monzonite	2	3	0	2	7.6	0.09	0.03	—	—	0.06	—

Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 8 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3877	67896	0	10	WASTE	YES	Monzonite	—	1	0	0	6.9	0.04	0.01	—	0.02	0.01	—
FX3877	67897	10	20	WASTE	YES	Monzonite	—	2	0	1	7.6	0.04	0.01	—	0.02	0.01	—
FX3877	67898	20	30	WASTE	YES	Monzonite	—	2	0	1	8	0.04	0.01	—	0.02	0.01	—
FX3877	67899	30	40	WASTE	YES	Monzonite	—	2	0	1	8.2	0.02	—	—	0.01	0.01	—
FX3877	67900	40	50	WASTE	YES	Monzonite	1	2	0	1	8.1	0.04	—	0.01	0.02	0.01	—
FX3877	67901	50	60	WASTE	YES	Monzonite	—	2	0	1	8.1	0.03	—	0.01	0.02	—	—
FX3877	67902	60	70	WASTE	YES	Monzonite	—	2	0	1	7.9	0.04	0.01	—	0.02	0.01	—
FX3877	67903	70	80	WASTE	YES	Monzonite	—	2	0	1	8.1	0.03	—	0.01	0.02	—	—
FX3877	67904	80	90	WASTE	YES	Monzonite	—	2	0	2	8.1	0.02	—	0.02	—	—	—
FX3877	67905	90	100	WASTE	YES	Monzonite	—	3	0	2	8	0.02	—	0.02	—	—	—
FX3877	67906	100	110	WASTE	YES	Monzonite	4	5	0	1	7.8	0.14	—	0.02	0.07	0.05	—
FX3877	67921	250	260	WASTE	NO	Monzonite	1	7	0	6	8.5	0.04	—	—	0.03	0.01	—
FX3877	67922	260	270	WASTE	NO	Monzonite	1	4	0	3	8.5	0.04	—	—	0.03	0.01	—
FX3877	67923	270	280	WASTE	NO	Monzonite	—	3	0	2	8.5	0.03	—	0.02	0.01	—	—
FX3878	67926	0	10	ORE	YES	Monzonite	—	6	6	5	7.2	0.03	0.01	—	0.02	—	0.019
FX3878	67927	10	20	WASTE	YES	Monzonite	—	5	5	4	7.4	0.04	—	—	0.02	0.01	—
FX3878	67928	20	30	WASTE	YES	Monzonite	—	7	7	7	8.4	0.02	0.01	0.01	—	—	—
FX3878	67929	30	40	WASTE	YES	Monzonite	1	6	6	5	8.1	0.06	0.02	0.01	0.02	0.01	—
FX3878	67930	40	50	WASTE	YES	Monzonite	6	2	0.3	−4	7.7	0.2	0.02	—	—	0.18	—
FX3879	67941	0	10	WASTE	YES	Monzonite	—	6	0	5	6.7	0.04	—	—	—	0.02	—
FX3879	67942	10	20	WASTE	YES	Monzonite	—	26	0	25	8.3	0.02	—	—	—	0.01	—
FX3879	67943	20	30	WASTE	YES	Monzonite	1	7	0	5	7.4	0.05	—	—	0.01	0.03	—
FX3879	67944	30	40	WASTE	YES	Monzonite	5	5	0	1	7.6	0.15	—	0.02	0.04	0.09	—
FX3870	67956	0	10	WASTE	YES	Monzonite	4	12	0	7	8.1	0.16	0.02	—	0.11	0.03	—
FX3870	67957	10	20	WASTE	YES	Monzonite	2	3	0	1	8.1	0.12	0.04	—	0.08	—	—
FX3870	67958	20	30	WASTE	YES	Monzonite	4	2	0	−1	8	0.12	0.01	—	0.11	—	—
FX3870	67959	30	40	WASTE	YES	Monzonite	3	−	0	−2	7.9	0.12	0.03	0.01	0.05	0.03	—
FX3870	67960	40	50	WASTE	YES	Monzonite	4	3	0	−1	8.1	0.15	—	0.01	0.09	0.04	—
FX3870	67961	50	60	WASTE	YES	Monzonite	2	4	0	2	8.2	0.1	0.03	—	0.08	—	—
FX3870	67962	60	70	WASTE	YES	Monzonite	—	3	0	2	8.5	0.04	0.02	0.01	0.02	—	—
FX3870	67963	70	80	WASTE	YES	Monzonite	—	2	0	2	8.6	0.02	—	0.01	—	—	—
FX3870	67964	80	90	WASTE	YES	Monzonite	—	3	0	2	8.6	0.02	0.01	0.01	—	—	—
FX3870	67965	90	100	WASTE	YES	Monzonite	—	3	0	3	8.6	0.02	0.01	0.01	—	—	—
FX3871	67966	0	10	WASTE	YES	Monzonite	8	1	0	−7	6.4	0.29	0.04	—	0.23	0.02	—

Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 9 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3871	67967	10	20	ORE	YES	Monzonite	7	1	0	-6	6.8	0.26	0.04	—	0.16	0.05	0.023
FX3871	67968	20	30	WASTE	YES	Monzonite	5	2	0	-3	7.3	0.2	0.04	—	0.15	0.01	—
FX3871	67969	30	40	WASTE	YES	Monzonite	6	2	0	-5	7.4	0.24	0.03	—	0.18	0.02	—
FX3871	67970	40	50	WASTE	YES	Monzonite	6	1	0	-5	7.4	0.24	0.04	—	0.21	—	—
FX3871	67971	50	60	WASTE	YES	Monzonite	5	2	0	-4	7.5	0.2	0.03	0.01	0.16	—	—
FX3871	67972	60	70	WASTE	YES	Monzonite	6	1	0	-5	7.7	0.22	0.04	—	0.16	0.02	—
FX3871	67973	70	80	WASTE	YES	Monzonite	3	2	0	-2	7.8	0.12	0.02	0.01	0.1	—	—
FX3871	67974	80	90	WASTE	YES	Monzonite	1	2	0	1	7.8	0.04	—	0.01	0.02	—	—
FX3871	67975	90	100	WASTE	YES	Monzonite	—	2	0	1	7.7	0.02	0.01	—	0.02	—	—
FX3871	67976	100	110	WASTE	YES	Monzonite	—	2	0	1	7.8	0.02	0.01	—	0.01	—	0.009
FX3871	67977	110	120	WASTE	YES	Monzonite	—	1	0	1	7.9	0.02	—	0.01	-	—	-
FX3871	67978	120	130	WASTE	YES	Monzonite	—	1	0	0	7.7	0.04	0.02	0.01	0.02	—	—
FX3871	67979	130	140	WASTE	YES	Monzonite	—	2	0	1	7.9	0.02	—	0.02	—	—	—
FX3871	67980	140	150	WASTE	YES	Monzonite	—	2	0	1	8	0.02	—	0.01	—	—	—
FX3872	67981	0	10	WASTE	YES	Monzonite	4	—	0	-3	7.2	0.15	0.02	—	0.12	0.01	—
FX3872	67982	10	20	WASTE	YES	Monzonite	4	2	0	-2	7.4	0.15	0.03	—	0.12	—	—
FX3872	67983	20	30	WASTE	YES	Monzonite	5	1	0	-4	7.6	0.17	0.02	0.01	0.12	0.02	0.01
FX3872	67984	30	40	WASTE	YES	Monzonite	1	2	0	1	7.8	0.04	—	0.01	0.03	—	—
FX3872	67985	40	50	WASTE	YES	Monzonite	2	3	0	2	7.8	0.06	—	0.02	0.04	—	—
FX3872	67986	50	60	WASTE	YES	Monzonite	2	2	0	0	7.8	0.09	0.02	0.02	0.05	—	—
FX3872	67987	60	70	ORE	YES	Monzonite	2	2	0	0	7.7	0.08	—	0.01	0.07	—	0.013
FX3872	67988	70	80	ORE	YES	Monzonite	5	3	0	-2	7.7	0.16	—	0.02	0.13	0.01	0.012
FX3872	67989	80	90	WASTE	YES	Monzonite	2	4	0	2	7.6	0.05	—	0.01	0.04	—	0.009
FX3872	67990	90	100	WASTE	YES	Monzonite	—	4	0	3	7.8	0.03	0.01	0.01	0.01	—	—
FX3873	68001	0	10	WASTE	YES	Monzonite	2	—	0	-1	6.7	0.07	0.02	—	0.04	0.02	0.01
FX3873	68002	10	20	ORE	YES	Monzonite	3	2	0	-1	7.1	0.12	0.02	—	0.1	—	0.045
FX3873	68003	20	30	ORE	YES	Monzonite	1	—	0	-1	7.2	0.04	—	—	0.04	—	0.016
FX3873	68004	30	40	WASTE	YES	Monzonite	—	3	0	2	7.4	0.02	0.01	—	0.01	—	-
FX3873	68005	40	50	ORE	YES	Monzonite	1	2	0	1	7.4	0.06	0.02	—	0.03	—	0.012
FX3873	68006	50	60	WASTE	YES	Monzonite	—	1	0	1	7.6	0.03	0.01	—	0.02	—	—
FX3873	68007	60	70	WASTE	YES	Monzonite	—	2	0	1	7.8	0.02	0.01	—	0.02	—	—
FX3873	68008	70	80	WASTE	YES	Monzonite	1	2	0	1	7.9	0.05	0.02	—	0.04	—	—
FX3873	68009	80	90	WASTE	YES	Monzonite	2	2	0	-1	8	0.08	0.02	—	0.05	0.02	—
FX3880	68021	0	10	WASTE	YES	Monzonite	1	4	0	3	6.8	0.04	—	—	0.01	0.02	—

Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 10 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3880	68022	10	20	WASTE	YES	Monzonite	—	1	0	1	7.7	0.02	0.01	—	0.02	—	—
FX3880	68023	20	30	WASTE	YES	Monzonite	—	2	0	1	7.9	0.02	—	—	—	—	—
FX3880	68024	30	40	WASTE	YES	Monzonite	—	2	0	1	8	0.03	—	—	—	0.02	—
FX3880	68025	40	50	WASTE	YES	Monzonite	2	3	0	1	8.1	0.08	0.02	—	0.01	0.06	—
FX3880	68026	50	60	WASTE	YES	Monzonite	2	1	0	−1	8	0.1	0.02	—	—	0.07	—
FX3880	68027	60	70	WASTE	YES	Monzonite	2	3	0	1	8	0.08	—	—	0.02	0.05	—
FX3880	68028	70	80	WASTE	YES	Monzonite	—	3	0	2	8	0.03	—	—	—	0.02	—
FX3880	68029	80	90	WASTE	YES	Monzonite	—	3	0	2	8	0.03	—	—	—	0.02	—
FX3880	68030	90	100	WASTE	YES	Monzonite	3	3	0	1	7.6	0.08	—	—	0.07	0.01	—
FX3880	68045	240	250	ORE	NO	Monzonite	2	8	0	6	8.8	0.05	—	0.01	0.02	0.02	0.011
FX3881	68046	0	10	WASTE	YES	Monzonite	1	1	0	0	7.2	0.06	0.02	—	0.03	0.01	—
FX3881	68047	10	20	WASTE	YES	Monzonite	—	1	0	1	7.8	0.03	0.01	—	0.02	—	—
FX3881	68048	20	30	WASTE	YES	Monzonite	—	3	0	2	8.1	0.02	—	0.01	—	0.01	—
FX3897	68093	220	230	WASTE	YES	Monzonite	−	7	7	6	9	0.03	—	—	0.02	—	—
FX3897	68097	260	270	WASTE	YES	Monzonite	1	6	6	4	8.9	0.04	—	0.01	0.03	—	—
FX3897	68101	300	310	WASTE	NO	Monzonite	—	7	7	7	9.1	0.02	—	—	0.01	—	0.008
FX3897	68105	340	350	WASTE	NO	Monzonite	—	8	8	7	9.2	0.02	—	—	—	—	—
FX3887	68126	200	210	WASTE	YES	Monzonite	—	10	10	10	9.1	0.01	—	—	—	—	—
FX3887	68130	240	250	WASTE	YES	Monzonite	—	10	10	10	9.2	0.02	—	—	—	—	—
FX3887	68134	280	290	ORE	NO	Monzonite	—	8	8	8	9.3	0.02	0.01	—	—	—	0.024
FX3887	68137	310	320	ORE	NO	Monzonite	—	7	7	7	9.2	0.02	—	—	0.02	—	0.013
FX3887	68141	350	360	WASTE	NO	Monzonite	—	9	9	9	9.3	0.02	—	—	—	—	—
FX3903	68170	240	250	WASTE	YES	Monzonite	—	45	45	45	8.4	0.02	—	—	0.01	—	—
FX3903	68174	280	290	ORE	YES	Monzonite	—	9	9	9	9.2	0.02	—	—	—	—	0.022
FX3903	68178	320	330	ORE	YES	Monzonite	2	21	10.5	19	8.3	0.06	—	0.01	0.03	0.01	0.015
FX3903	68182	360	370	ORE	YES	Monzonite	—	5	5	4	9.1	0.02	0.01	—	—	—	0.017
FX3903	68186	400	410	WASTE	NO	Monzonite	—	10	10	9	8.7	0.02	—	—	—	—	—
FX3903	68190	440	450	ORE	NO	Monzonite	—	18	18	18	8.7	0.03	—	—	0.02	—	0.011
FX3888	68207	160	170	WASTE	YES	Monzonite	3	51	17	47	8.7	0.12	0.02	0.02	0.07	0.02	—
FX3888	68217	260	270	ORE	YES	Monzonite	—	9	9	9	9.5	0.02	—	—	—	—	0.011
FX3888	68221	300	310	ORE	YES	Monzonite	2	9	4.5	7	9.3	0.07	—	0.01	0.05	0.01	0.061
FX3888	68225	340	350	ORE	YES	Monzonite	7	9	1.3	2	9	0.24	0.02	0.02	0.18	0.03	0.014
FX3888	68229	380	390	WASTE	NO	Monzonite	—	8	8	8	9.2	0.02	—	—	—	—	0.008
FX3888	68233	420	430	ORE	NO	Monzonite	—	6	6	5	9.5	0.02	—	0.01	0.01	—	0.011

Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 11 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3888	68235	440	450	WASTE	NO	Monzonite	—	13	13	13	9.3	0.02	—	—	0.02	—	—
FX3857	68281	0	10	WASTE	YES	Monzonite	4	2	0	−1	8	0.16	0.04	—	0.12	—	—
FX3857	68282	10	20	WASTE	YES	Monzonite	3	2	0	−1	7.9	0.12	0.02	—	0.11	—	—
FX3857	68283	20	30	WASTE	YES	Monzonite	2	2	0	1	8	0.07	0.01	—	0.06	—	—
FX3857	68284	30	40	WASTE	YES	Monzonite	2	2	0	1	7.7	0.07	0.01	—	0.03	0.03	—
FX3857	68285	40	50	WASTE	YES	Monzonite	3	2	0	−1	8	0.1	0.01	—	0.06	0.03	—
FX3857	68286	50	60	WASTE	YES	Monzonite	—	4	0	3	8.1	0.04	—	—	0.01	0.02	—
FX3857	68287	60	70	WASTE	YES	Monzonite	—	4	0	3	8.3	0.04	—	—	0.01	0.02	—
FX3857	68288	70	80	WASTE	YES	Monzonite	2	3	0	1	8	0.08	0.01	—	0.02	0.04	—
FX3898	68296	0	10	WASTE	YES	Monzonite	2	2	0	−1	7.1	0.11	0.03	—	0.08	—	0.01
FX3898	68297	10	20	ORE	YES	Monzonite	6	—	0	−5	7.2	0.28	0.1	—	0.09	0.09	0.015
FX3898	68298	20	30	ORE	YES	Monzonite	4	1	0	−3	7.5	0.2	0.06	—	0.12	0.02	0.012
FX3898	68299	30	40	WASTE	YES	Monzonite	5	1	0	−4	7.9	0.2	0.04	—	0.14	0.01	—
FX3898	68300	40	50	ORE	YES	Monzonite	4	2	0	−1	8.1	0.15	0.02	—	0.11	0.01	0.015
FX3898	68301	50	60	ORE	YES	Monzonite	—	4	0	3	8.2	0.02	—	—	0.02	—	0.018
FX3898	68302	60	70	WASTE	YES	Monzonite	—	3	0	2	7.9	0.02	—	—	0.02	—	—
FX3898	68303	70	80	WASTE	YES	Monzonite	1	4	0	2	8.3	0.04	—	0.01	0.02	—	—
FX3898	68304	80	90	WASTE	YES	Monzonite	—	3	0	2	8.6	0.04	0.01	—	0.02	—	—
FX3898	68305	90	100	WASTE	YES	Monzonite	—	3	0	2	8.7	0.02	—	—	0.02	—	—
FX3898	68306	100	110	WASTE	YES	Monzonite	1	3	0	2	8.2	0.06	0.02	—	0.02	0.01	—
FX3899	68316	0	10	ORE	YES	Monzonite	—	2	0	2	6.9	0.02	—	—	0.02	—	0.015
FX3899	68317	10	20	ORE	YES	Monzonite	—	6	0	5	7.5	0.02	—	—	0.02	—	0.018
FX3899	68318	20	30	ORE	YES	Monzonite	1	5	0	4	7.2	0.05	0.01	0.01	0.03	—	0.02
FX3899	68319	30	40	ORE	YES	Monzonite	—	4	0	4	7.4	0.02	—	0.01	—	—	0.015
FX3899	68320	40	50	WASTE	YES	Monzonite	1	7	0	6	7.7	0.05	—	0.02	0.02	—	—
FX3899	68321	50	60	WASTE	YES	Monzonite	—	6	0	5	7.6	0.02	—	—	0.01	—	—
FX3899	68322	60	70	ORE	YES	Monzonite	—	7	0	7	7.5	0.02	—	—	0.01	—	0.025
FX3899	68323	70	80	WASTE	YES	Monzonite	—	6	0	5	7.5	0.03	—	0.02	—	—	—
FX3899	68324	80	90	WASTE	YES	Monzonite	2	6	0	4	7.5	0.06	—	0.04	0.01	—	—
FX3899	68325	90	100	ORE	YES	Monzonite	—	6	0	5	7.8	0.04	0.02	0.01	—	—	0.025
FX3899	68326	100	110	WASTE	YES	Monzonite	—	6	0	5	7.8	0.02	—	0.02	—	—	—
FX3899	68327	110	120	ORE	YES	Monzonite	—	5	0	5	7.8	0.02	—	0.02	—	—	0.011
FX3899	68328	120	130	WASTE	YES	Monzonite	—	6	0	5	7.9	0.02	—	—	0.02	—	—
FX3899	68340	240	250	WASTE	NO	Monzonite	2	10	0	8	8.4	0.1	0.04	—	0.07	—	—



Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 12 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3901	68341	0	10	WASTE	YES	Monzonite	2	5	0	3	7.2	0.06	0.02	—	0.05	—	—
FX3901	68342	10	20	WASTE	YES	Monzonite	2	4	0	3	7.7	0.06	—	—	0.05	—	—
FX3901	68343	20	30	WASTE	YES	Monzonite	—	4	0	4	7.7	0.01	—	—	—	—	—
FX3901	68344	30	40	WASTE	YES	Monzonite	1	6	0	5	8.1	0.06	0.01	—	0.02	0.02	—
FX3901	68345	40	50	WASTE	YES	Monzonite	—	4	0	3	8.2	0.02	—	—	0.02	—	—
FX3901	68346	50	60	WASTE	YES	Monzonite	—	7	0	7	8.2	0.01	—	—	—	—	—
FX3901	68347	60	70	WASTE	YES	Monzonite	4	6	0	3	8	0.15	0.02	—	0.08	0.04	—
FX3902	68356	0	10	WASTE	YES	Monzonite	2	2	0	1	7.6	0.06	0.01	—	0.05	—	—
FX3902	68357	10	20	WASTE	YES	Monzonite	—	2	0	2	8	0.04	0.01	—	0.02	—	—
FX3902	68358	20	30	WASTE	YES	Monzonite	—	3	0	2	8.3	0.04	—	0.01	0.02	—	—
FX3902	68359	30	40	WASTE	YES	Monzonite	—	4	0	3	8.3	0.04	0.02	—	0.02	—	—
FX3902	68360	40	50	WASTE	YES	Monzonite	1	3	0	2	8.4	0.04	0.01	—	0.03	—	—
FX3902	68361	50	60	WASTE	YES	Monzonite	—	5	0	5	8.2	0.02	—	0.01	0.01	—	—
FX3902	68362	60	70	WASTE	YES	Monzonite	—	4	0	3	8.1	0.02	—	—	0.02	—	—
FX3902	68363	70	80	WASTE	YES	Monzonite	—	5	0	5	8.3	0.02	—	—	0.02	—	—
FX3902	68364	80	90	WASTE	YES	Monzonite	—	4	0	3	8.5	0.02	—	—	0.02	—	—
FX3902	68365	90	100	ORE	YES	Monzonite	5	6	0	1	7.9	0.18	0.02	—	0.1	0.06	0.07
FX3902	68379	230	240	WASTE	YES	Monzonite	—	6	0	6	8.3	0.02	—	—	0.02	—	—
FX3902	68380	240	250	WASTE	NO	Monzonite	—	2	0	1	8.2	0.02	—	—	0.02	—	—
FX3890	68413	320	330	WASTE	YES	Monzonite	—	14	0	13	8.8	0.04	—	0.01	0.02	—	—
FX3890	68417	360	370	WASTE	YES	Monzonite	—	24	0	24	9	0.02	—	—	0.01	—	—
FX3890	68418	370	380	WASTE	YES	Monzonite	—	13	0	12	9.2	0.02	—	0.01	0.02	—	—
FX3892	68463	320	330	WASTE	YES	Monzonite	—	81	81	80	8	—	—	—	—	—	—
FX3892	68467	360	370	WASTE	YES	Monzonite	—	23	23	22	9.3	0.02	—	—	0.01	—	—
FX3892	68471	400	410	ORE	YES	Monzonite	—	8	8	8	9.5	0.02	—	—	0.01	—	0.021
FX3892	68475	440	450	WASTE	YES	Monzonite	—	15	15	15	9.4	0.01	0.01	—	—	—	—
FX3896	68503	270	280	WASTE	YES	Monzonite	—	16	16	16	8.5	—	—	—	—	—	—
FX3896	68507	310	320	ORE	YES	Monzonite	—	7	7	6	9.2	0.02	—	—	0.02	—	0.024
FX3896	68511	350	360	ORE	YES	Monzonite	—	8	8	8	9.1	0.02	—	0.02	—	—	0.054
FX3896	68512	360	370	ORE	YES	Monzonite	—	14	14	13	8.8	0.01	—	—	—	—	0.012
FX3896	68515	390	400	ORE	NO	Monzonite	—	11	11	11	9.2	0.02	—	0.02	—	—	0.014
FX3900	68527	110	120	WASTE	YES	Monzonite	2	85	42.5	82	9	0.08	0.02	0.01	0.05	0.01	—
FX3900	68529	130	140	WASTE	YES	Monzonite	2	45	22.5	43	9.2	0.06	—	0.01	0.03	0.02	—
FX3891	68581	200	210	WASTE	YES	Monzonite	2	41	20.5	39	8.8	0.06	—	0.02	0.04	—	—



Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 13 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3893	68635	320	330	ORE	NO	Monzonite	—	20	20	20	8.8	0.02	—	0.01	—	—	0.013
FX3893	68639	360	370	ORE	NO	Monzonite	—	13	13	13	8.8	0.02	—	—	0.01	—	0.021
FX3893	68643	400	410	ORE	NO	Monzonite	—	13	13	12	8.7	0.01	—	—	-	—	0.014
FX3895	68731	360	370	WASTE	YES	Monzonite	—	8	8	8	8.8	0.02	—	—	0.01	—	—
FX3895	68735	400	410	ORE	YES	Monzonite	—	5	5	5	9	0.02	—	—	—	—	0.032
FX3895	68739	440	450	ORE	YES	Monzonite	—	6	6	6	8.8	0.01	—	0.01	—	—	0.018
FX3895	68743	480	490	ORE	YES	Monzonite	—	5	5	4	8.7	0.01	—	0.01	—	—	0.015
FX3910	68762	180	190	WASTE	YES	Monzonite	—	116	116	116	8.5	—	—	—	—	—	—
FX3910	68778	340	350	WASTE	YES	Monzonite	—	16	16	15	8.7	0.04	—	0.01	0.02	—	—
FX3910	68782	380	390	ORE	YES	Monzonite	3	9	3	6	9.2	0.12	0.02	—	0.1	—	0.04
FX3915	68828	390	400	ORE	YES	Monzonite	—	10	10	10	9.3	0.02	—	0.01	—	—	0.013
FX3915	68832	430	440	ORE	YES	Monzonite	—	9	9	9	9.2	0.02	—	—	0.01	—	0.055
FX3915	68836	470	480	WASTE	YES	Monzonite	—	5	5	5	9.2	0.02	—	0.01	—	—	—
FX3905	68860	210	220	WASTE	YES	Monzonite	—	110	110	109	8.9	0.03	—	0.01	0.02	—	—
FX3907	68945	140	150	WASTE	YES	Monzonite	—	54	54	53	8.5	0.02	—	—	—	—	—
FX3907	68973	420	430	WASTE	YES	Monzonite	—	8	8	8	9.1	0.02	—	0.01	—	—	—
FX3907	68977	460	470	WASTE	NO	Monzonite	—	10	10	10	9.3	0.01	—	0.01	—	—	—
FX3909	69148	200	210	WASTE	YES	Monzonite	2	60	30	58	8.6	0.06	—	—	0.05	—	—
FX3909	69168	400	410	ORE	YES	Monzonite	56	15	0.3	-41	7.5	2.1	0.34	—	1.7	0.11	0.154
FX3909	69169	410	420	ORE	YES	Monzonite	18	21	1.2	3	7.4	0.66	0.08	—	0.54	0.04	0.095
FX3912	69192	140	150	ORE	YES	Monzonite	—	55	55	54	8.8	0.03	—	—	0.01	0.01	0.059
FX3912	69195	170	180	ORE	YES	Monzonite	20	59	3	39	7.9	0.71	0.08	—	0.59	0.03	0.068
FX3912	69215	370	380	WASTE	YES	Monzonite	7	25	3.6	18	8.8	0.26	0.02	0.03	0.15	0.05	—
FX3912	69219	410	420	ORE	YES	Monzonite	6	79	13.2	73	8.8	0.23	0.05	—	0.16	0.02	0.013
FX3912	69223	450	460	ORE	YES	Monzonite	—	17	17	17	9.6	0.01	—	—	—	—	0.011
FX3912	69227	490	500	ORE	YES	Monzonite	—	15	15	15	9.5	0.01	—	—	0.01	—	0.012
FX3913	69270	420	430	ORE	YES	Monzonite	—	30	30	29	9	0.04	0.01	0.01	—	0.03	0.024
FX3913	69274	460	470	ORE	YES	Monzonite	—	18	18	18	9.3	0.03	—	—	—	0.03	0.061
FX3913	69277	490	500	ORE	NO	Monzonite	—	25	25	24	9.2	0.03	—	—	0.01	0.01	0.029
FX3926	69297	190	200	WASTE	YES	Monzonite	—	16	16	15	8.9	0.03	—	0.01	0.02	—	—
FX3926	69301	230	240	WASTE	YES	Monzonite	1	8	8	7	9	0.04	—	—	0.02	0.01	0.009
FX3926	69305	270	280	WASTE	YES	Monzonite	1	9	9	8	9.1	0.04	—	—	0.02	0.01	—
FX3926	69309	310	320	WASTE	YES	Monzonite	—	9	9	9	9	0.01	—	0.01	—	—	—
FX3926	69313	350	360	ORE	YES	Monzonite	—	8	8	8	9.1	0.01	—	—	—	—	0.017

Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 14 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3916	69346	280	290	ORE	YES	Monzonite	—	17	17	16	8.8	0.03	—	0.01	0.02	—	0.018
FX3916	69350	320	330	ORE	YES	Monzonite	—	11	11	11	9.3	0.02	—	0.01	—	—	0.012
FX3916	69354	360	370	ORE	YES	Monzonite	—	7	7	7	9	0.02	—	—	0.01	0.01	0.028
FX3916	69358	400	410	ORE	YES	Monzonite	1	11	11	9	9.1	0.05	—	0.02	0.03	—	0.031
FX3916	69362	440	450	WASTE	YES	Monzonite	2	9	4.5	7	8.7	0.1	0.02	0.02	0.05	0.01	—
FX3928	69400	360	370	ORE	YES	Monzonite	—	66	66	66	8.4	0.02	—	0.01	—	—	0.057
FX3928	69404	400	410	ORE	YES	Monzonite	—	11	11	10	9.1	0.02	—	0.01	0.01	—	0.035
FX3928	69408	440	450	ORE	YES	Monzonite	1	8	8	7	9.3	0.04	—	—	0.03	—	0.033
FX3917	69447	380	390	ORE	YES	Monzonite	2	22	11	20	8.5	0.07	—	—	0.06	—	0.015
FX3917	69451	420	430	ORE	YES	Monzonite	2	10	5	8	8.6	0.08	0.02	—	0.03	0.02	0.018
FX3917	69455	460	470	ORE	YES	Monzonite	—	10	10	10	9.3	0.02	—	—	0.01	—	0.023
FX3918	69496	370	380	WASTE	YES	Monzonite	—	26	26	25	8.7	0.04	0.01	—	0.03	—	—
FX3918	69500	410	420	WASTE	YES	Monzonite	—	27	27	27	9	0.03	0.01	—	0.02	—	0.01
FX3918	69504	450	460	ORE	YES	Monzonite	—	23	23	23	9	0.02	—	—	0.02	—	0.017
FX3918	69508	490	500	ORE	YES	Monzonite	—	22	22	22	8.9	0.03	0.01	—	0.02	—	0.011
FX3914	69546	370	380	WASTE	YES	Monzonite	2	21	10.5	19	9	0.06	0.01	—	0.05	—	—
FX3914	69551	420	430	WASTE	YES	Monzonite	—	13	13	12	9.5	0.02	—	—	0.02	—	—
FX3914	69555	460	470	ORE	YES	Monzonite	—	12	12	12	9.6	0.02	—	—	—	—	0.015
FX3914	69558	490	500	WASTE	YES	Monzonite	—	12	12	12	9.5	0.02	—	0.01	—	—	0.009
FX3920	69598	390	400	WASTE	YES	Monzonite	2	43	21.5	41	8.7	0.07	0.01	—	0.06	—	—
FX3921	69630	210	220	WASTE	YES	Monzonite	-	37	37	36	8.2	—	—	—	—	—	—
FX3922	69670	210	220	ORE	YES	Monzonite	9	32	3.6	23	8.3	0.32	0.02	—	0.27	0.03	0.013
FX3922	69671	220	230	WASTE	YES	Monzonite	11	5	0.5	-6	7.7	0.42	0.06	—	0.35	0.01	0.01
FX3922	69672	230	240	ORE	YES	Monzonite	1	10	10	8	8.5	0.04	—	—	0.04	—	0.029
FX3922	69673	240	250	WASTE	YES	Monzonite	22	9	0.4	-14	7.3	0.8	0.08	—	0.66	0.06	0.009
FX3922	69674	250	260	WASTE	YES	Monzonite	17	20	1.2	3	6.9	0.62	0.08	—	0.51	0.03	—
FX3922	69675	260	270	WASTE	YES	Monzonite	2	88	44	86	8.2	0.12	0.05	—	0.07	—	—
FX3922	69697	480	490	WASTE	NO	Monzonite	8	12	1.5	4	9.2	0.27	0.02	0.02	0.21	0.02	—
FX3922	69701	520	530	ORE	NO	Monzonite	—	9	9	8	9.4	0.02	—	—	0.02	—	0.017
FX3922	69704	550	560	ORE	NO	Monzonite	—	10	10	10	9.4	0.01	—	—	—	—	0.012
FX3925	69792	350	360	WASTE	YES	Monzonite	11	57	5.2	45	8.5	0.38	0.02	-	0.34	0.02	—
FX3925	69796	390	400	WASTE	YES	Monzonite	—	13	13	13	9.1	0.02	—	0.01	0.01	—	0.01
FX3925	69800	430	440	WASTE	YES	Monzonite	—	9	9	8	9.1	0.02	—	—	—	—	—
FX3925	69804	470	480	WASTE	YES	Monzonite	—	12	12	12	8.8	0.02	0.01	—	0.01	—	—

Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 15 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3925	69806	490	500	WASTE	NO	Monzonite	—	13	13	12	9	0.02	—	0.01	0.01	—	—
FX3927	69847	400	410	WASTE	YES	Monzonite	—	13	13	13	9	0.02	0.01	—	0.01	—	0.01
FX3927	69851	440	450	ORE	YES	Monzonite	—	8	8	8	8.9	0.02	—	0.01	0.01	—	0.015
FX3927	69855	480	490	WASTE	YES	Monzonite	—	8	8	7	9.2	0.02	—	0.01	—	—	—
FX3930	69966	240	250	WASTE	YES	Monzonite	—	10	10	9	9.4	0.03	—	—	0.01	0.01	—
FX3930	69970	280	290	ORE	YES	Monzonite	2	9	4.5	7	9	0.1	0.02	0.02	0.03	0.03	0.047
FX3930	69974	320	330	ORE	YES	Monzonite	—	7	7	6	8.1	0.02	—	—	0.01	—	0.016
FX3930	69978	360	370	ORE	YES	Monzonite	—	9	9	8	9.5	0.02	—	—	—	—	0.021
FX3930	69982	400	410	WASTE	YES	Monzonite	—	12	12	11	9.3	0.01	—	0.01	—	—	—
FX3930	69986	440	450	WASTE	NO	Monzonite	4	12	3	8	8.6	0.12	—	0.03	0.08	0.01	0.009
FX3929	70014	270	280	WASTE	YES	Monzonite	1	16	16	14	8.6	0.06	0.01	—	0.04	—	—
FX3929	70018	310	320	ORE	YES	Monzonite	2	9	4.5	8	8.9	0.06	0.02	—	0.02	0.03	0.047
FX3929	70022	350	360	ORE	YES	Monzonite	—	12	12	11	9.1	0.02	—	0.02	—	—	0.012
FX3929	70026	390	400	WASTE	YES	Monzonite	1	10	10	9	8.5	0.04	—	—	0.03	—	—
FX3929	70030	430	440	WASTE	NO	Monzonite	—	12	12	11	9.2	0.01	—	0.01	—	—	—
FX3933	70153	290	300	ORE	YES	Monzonite	—	15	15	14	9.8	0.02	—	—	0.01	—	0.02
FX3933	70156	320	330	ORE	YES	Monzonite	—	8	8	8	9.1	0.02	—	0.01	—	—	0.022
FX3933	70160	360	370	ORE	YES	Monzonite	3	12	4	9	8.6	0.1	0.01	0.02	0.06	0.01	0.013
FX3933	70164	400	410	ORE	YES	Monzonite	—	11	11	10	9.1	0.02	—	0.01	0.01	—	0.025
FX3933	70168	440	450	WASTE	NO	Monzonite	—	9	9	9	9.1	0.02	—	—	0.02	—	0.008
FX3932	70280	230	240	WASTE	YES	Monzonite	—	23	23	22	8.7	0.03	—	0.01	0.02	—	—
FX3932	70284	270	280	WASTE	YES	Monzonite	—	8	8	7	9	0.02	—	0.01	—	—	—
FX3932	70288	310	320	WASTE	YES	Monzonite	—	9	9	8	8.9	0.02	—	0.01	0.01	—	—
FX3932	70292	350	360	WASTE	YES	Monzonite	2	8	4	6	9	0.06	—	0.01	0.05	—	—
FX3932	70296	390	400	ORE	YES	Monzonite	—	6	6	5	9.1	0.03	—	0.01	0.02	—	0.05
FX4247	80868	460	470	WASTE	NO	Monzonite	—	244	244	243	0	0.03	—	—	—	0.02	—
FX4247	80876	540	550	WASTE	NO	Monzonite	1	16	16	15	0	0.04	—	—	—	0.03	—
FX4247	80880	580	590	ORE	NO	Monzonite	1	9	9	8	0	0.04	—	—	—	0.03	0.014
FX4248	80929	470	480	WASTE	YES	Monzonite	4	15	3.8	12	0	0.13	0.01	-	0.09	0.03	—
FX4248	80937	550	560	WASTE	NO	Monzonite	—	16	16	15	0	0.04	—	—	—	0.02	—
FX4249	81013	470	480	WASTE	NO	Monzonite	—	98	98	97	0	0.03	—	—	—	0.03	—
FX4249	81022	560	570	ORE	NO	Monzonite	1	11	11	9	0	0.04	—	—	—	0.03	0.016
FX4249	81023	570	580	WASTE	NO	Monzonite	2	8	4	6	0	0.06	—	—	0.02	0.03	—
FX4251	81137	510	520	WASTE	NO	Monzonite	2	29	14.5	27	0	0.08	—	—	0.04	0.03	—

Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 16 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4251	81141	550	560	WASTE	NO	Monzonite	1	16	16	15	0	0.03	—	—	—	0.02	—
FX4251	81145	590	600	ORE	NO	Monzonite	1	13	13	12	0	0.04	—	—	—	0.03	0.02
FX4406	83239	470	480	WASTE	YES	Monzonite	1	17		16	0	0.04	0	0	0	0.03	—
FX4406	83243	510	520	WASTE	YES	Monzonite	1	13		12	0	0.04	0	0	0	0.03	—
FX4410	83374	390	400	WASTE	YES	Monzonite	1	17		16	0	0.04				0.03	—
FX4410	83378	430	440	WASTE	YES	Monzonite	1	13		12	0	0.04				0.03	—
FX4409	83416	350	360	ORE	YES	Monzonite	56	16		-40	0	2	0.24	0	1.7	0.12	0.021
FX4409	83420	390	400	WASTE	YES	Monzonite	2	17		16	0	0.05	0	0	0.02	0.03	—
FX4409	83424	430	440	WASTE	YES	Monzonite	1	15		14	0	0.04	0	0	0	0.03	—
FX4414	83508	350	360	ORE	YES	Monzonite	2	35		33	0	0.07			0.02	0.04	0.027
FX4414	83512	390	400	ORE	YES	Monzonite	1	17		16	0	0.04				0.03	0.02
FX4412	83561	390	400	WASTE	YES	Monzonite	1	14		13	0	0.04				0.03	—
FX4412	83565	430	440	WASTE	YES	Monzonite	1	9		8	0	0.04				0.03	—
FX4413	83602	350	360	ORE	YES	Monzonite	2	14		12	0	0.05			0.02	0.03	0.014
FX4413	83606	390	400	ORE	YES	Monzonite	1	14		12	0	0.04				0.04	0.015
FX4413	83610	430	440	ORE	YES	Monzonite	1	9		8	0	0.04				0.03	0.012
FX4461	83712	390	400	WASTE	YES	Monzonite	1	5		4	0	0.04				0.04	—
FX4461	83716	430	440	WASTE	YES	Monzonite		4		3	0	0.03				0.03	—
FX4461	83720	470	480	WASTE	YES	Monzonite	1	6		5	0	0.03				0.04	—
FX4431	83812	490	500	ORE	NO	Monzonite	4	10		6	0	0.16	0.02		0.02	0.11	0.029
FX4431	83814	510	520	ORE	NO	Monzonite	5	16		11	0	0.17	0.01		0.11	0.04	0.018
FX4430	83868	510	520	WASTE	NO	Monzonite	6	16		10	0	0.21	0.02		0.15	0.05	—
FX4430	83871	540	550	WASTE	NO	Monzonite	8	66		59	0	0.24		0.02	0.18	0.05	—
FX4416	83911	390	400	ORE	YES	Monzonite	2	15		13	0	0.07	0.02			0.05	0.015
FX4416	83915	430	440	WASTE	YES	Monzonite	2	16		14	0	0.05				0.04	—
FX4418	83958	390	400	WASTE	YES	Monzonite	1	14		12	0	0.04				0.04	—
FX4418	83962	430	440	WASTE	YES	Monzonite	1	9		8	0	0.05				0.04	—
FX4419	84002	370	380	WASTE	YES	Monzonite	2	31		30	0	0.06				0.05	—
FX4419	84004	390	400	WASTE	YES	Monzonite	1	16		15	0	0.04				0.03	—
FX4419	84008	430	440	WASTE	YES	Monzonite	1	17		16	0	0.05	0.01			0.04	—
FX4420	84051	390	400	WASTE	YES	Monzonite	1	22		21	0	0.05				0.03	—
FX4420	84055	430	440	WASTE	YES	Monzonite	1	20		19	0	0.05	0.01			0.03	—
FX4421	84098	390	400	WASTE	YES	Monzonite	2	32		30	0	0.1	0.02			0.06	—
FX4421	84102	430	440	ORE	YES	Monzonite	1	28		27	0	0.05			0.01	0.03	0.016

Table D-5A. Acid Base Accounting for Monzonite Porphyry (Historical Data) (Page 17 of 17)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4421	84106	470	480	ORE	YES	Monzonite	1	26		25	0	0.04				0.03	0.015
FX4423	84206	470	480	ORE	NO	Monzonite	4	24		20	0	0.13			0.03	0.09	0.017
FX4427	84257	470	480	ORE	NO	Monzonite	4	13		9	0	0.14	0.02		0.07	0.05	0.018
FX4427	84261	510	520	WASTE	NO	Monzonite	4	13		9	0	0.14	0.02	0.01	0.05	0.06	—
FX4417	84352	370	380	WASTE	YES	Monzonite	7	4		-2	0	0.25	0.04		0.17	0.04	—
FX4417	84354	390	400	ORE	YES	Monzonite	2	11		10	0	0.06				0.05	0.02
FX4417	84358	430	440	ORE	YES	Monzonite	1	12		11	0	0.04				0.04	0.016
FX4425	84406	450	460	WASTE	NO	Monzonite	6	25		19	0	0.21			0.16	0.04	—
FX4425	84408	470	480	WASTE	NO	Monzonite	2	33		31	0	0.06			0.03	0.03	—
FX4425	84412	510	520	WASTE	NO	Monzonite	1	15		14	0	0.05			0.01	0.03	—
FX4426	84461	470	480	WASTE	NO	Monzonite	1	9		8	0	0.05				0.04	—
FX4426	84465	510	520	WASTE	NO	Monzonite	6	13		7	0	0.2			0.14	0.05	—
FX4422	84615	470	480	WASTE	YES	Monzonite	1	16		15	0	0.05				0.03	—
FX4424	84666	470	480	ORE	NO	Monzonite	1	17		15	0	0.05			0.01	0.03	0.021
FX4428	84716	470	480	WASTE	NO	Monzonite	1	20		19	0	0.05				0.03	—
FX4428	84720	510	520	ORE	NO	Monzonite	1	17		15	0	0.04				0.03	0.023
FX4459	84802	370	380	ORE	YES	Monzonite	4	24		20	0	0.13	0.02		0.08	0.04	0.019
FX4459	84804	390	400	ORE	YES	Monzonite		16		15	0	0.03				0.03	0.015
FX4459	84808	430	440	ORE	YES	Monzonite	1	9		8	0	0.03				0.04	0.016
FX4459	84812	470	480	WASTE	YES	Monzonite	1	8		7	0	0.03				0.04	—
FX4460	86187	470	480	WASTE	YES	Monzonite	1	3		2	0	0.03				0.04	—
FX4460	86191	510	520	WASTE	YES	Monzonite		2		1	0	0.03				0.04	—

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 1 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4748	28156	140	150	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	8.07	0.12	0.15	<0.02	—
W21R–4748	28157	150	160	WASTE	FALSE	Monzonite	1.6	0	#N/A	–1.6	7.18	0.21	0.16	0.05	0.002
W21R–4748	28204	530	540	WASTE	TRUE	Monzonite	<0.6	4.5	#N/A	4.5	8.86	<0.02	0.01	<0.02	—
W21R–4748	28205	540	550	WASTE	FALSE	Monzonite	<0.6	3.8	#N/A	3.8	8.84	<0.02	0.01	<0.02	0.004
W21R–4748	28206	550	560	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	9.19	<0.02	0.01	<0.02	0.002
W21R–4748	28207	560	570	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	9.32	<0.02	0.01	<0.02	—
W21R–4748	28208	570	580	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.2	<0.02	0.01	<0.02	—
W21R–4748	28209	580	590	WASTE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	8.82	0.03	0.03	<0.02	—
W21R–4748	28210	590	600	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	9.07	0.03	0.02	<0.02	—
W21R–4748	28211	600	610	WASTE	FALSE	Monzonite	<0.6	5.5	#N/A	5.5	8.84	<0.02	0.02	<0.02	0.005
W21R–4748	28212	610	620	WASTE	FALSE	Monzonite	<0.6	5	#N/A	5	8.63	0.04	0.03	<0.02	0.004
W21R–4748	28213	620	630	WASTE	FALSE	Monzonite	<0.6	3.3	#N/A	3.3	8.81	<0.02	0.01	<0.02	0.001
W21R–4748	28214	630	640	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	9.22	<0.02	0.02	<0.02	0.002
W21R–4748	28215	640	650	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	9.24	<0.02	0.02	<0.02	0.001
W21R–4748	28216	650	660	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	9.18	<0.02	0.01	<0.02	—
W21R–4748	28217	660	670	WASTE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	9.19	<0.02	0.01	<0.02	—
W21R–4748	28218	670	680	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	9.19	<0.02	0.01	<0.02	—
W21R–4748	28221	680	690	WASTE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	9.38	<0.02	0.01	<0.02	—
W21R–4748	28222	690	700	WASTE	FALSE	Monzonite	<0.6	3.3	#N/A	3.3	9.09	<0.02	0.01	<0.02	0.003
W21R–4749	28258	300	310	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	8.68	<0.02	0.01	<0.02	—
W21R–4749	28259	310	320	WASTE	FALSE	Monzonite	<0.6	41.4	#N/A	41.4	9.04	0.02	0.02	<0.02	—
W21R–4749	28260	320	330	WASTE	FALSE	Monzonite	<0.6	55	#N/A	55	8.84	0.03	0.02	<0.02	—
W21R–4749	28261	330	340	WASTE	FALSE	Monzonite	<0.6	0	#N/A	0	8.28	<0.02	<0.01	<0.02	—
W21R–4749	28264	340	350	WASTE	FALSE	Monzonite	<0.6	3.5	#N/A	3.5	8.75	0.03	0.02	<0.02	—
W21R–4749	28268	350	360	WASTE	FALSE	Monzonite	<0.6	5	#N/A	5	8.97	0.03	0.02	<0.02	—
W21R–4749	28269	360	370	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	9.25	0.03	0.02	<0.02	0.002
W21R–4749	28270	370	380	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	9.12	0.03	0.02	<0.02	0.001
W21R–4749	28271	380	390	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	8.79	0.04	0.05	<0.02	0.002
W21R–4749	28272	390	400	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	9.12	0.02	0.02	<0.02	0.002
W21R–4749	28273	400	410	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	9.07	<0.02	0.02	<0.02	—
W21R–4749	28274	410	420	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	9.11	<0.02	0.02	<0.02	0.001
W21R–4749	28275	420	430	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	9	<0.02	0.02	<0.02	0.004
W21R–4749	28276	430	440	WASTE	FALSE	Monzonite	<0.6	0.7	#N/A	0.7	8.88	0.07	0.06	<0.02	—
W21R–4749	28277	440	450	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	8.68	0.04	0.04	<0.02	0.004

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 2 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4749	28278	450	460	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	9.3	<0.02	0.01	<0.02	0.003
W21R–4749	28279	460	470	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	9.32	<0.02	0.01	<0.02	0.004
W21R–4749	28280	470	480	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	9.19	<0.02	0.01	<0.02	—
W21R–4749	28281	480	490	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.03	<0.02	0.01	<0.02	0.004
W21R–4749	28282	490	500	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	9.48	0.03	0.02	<0.02	0.008
W21R–4749	28283	500	510	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.29	0.03	0.03	<0.02	0.009
W21R–4749	28286	510	520	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.43	0.04	0.03	<0.02	0.006
W21R–4749	28287	520	530	ORE	FALSE	Monzonite	<0.6	1	#N/A	1	9.17	0.03	0.02	<0.02	0.011
W21R–4749	28288	530	540	ORE	FALSE	Monzonite	1.3	1	0.8	–0.3	8.81	0.11	0.07	0.04	0.021
W21R–4749	28289	540	550	ORE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	8.56	<0.02	0.01	<0.02	0.043
W21R–4749	28299	640	650	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	8.51	0.17	0.18	<0.02	0.008
W21R–4749	28300	650	660	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.19	0.07	0.07	<0.02	0.004
W21R–4749	28301	660	670	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.21	0.04	0.04	<0.02	0.002
W21R–4749	28302	670	680	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	9.18	<0.02	0.02	<0.02	0.002
W21R–4749	28305	680	690	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	8.95	<0.02	0.02	<0.02	—
W21R–4749	28306	690	700	WASTE	TRUE	Monzonite	<0.6	2	#N/A	2	9.03	0.03	0.02	<0.02	0.001
W21R–4749	28310	700	710	WASTE	FALSE	Monzonite	<0.6	2.7	#N/A	2.7	8.87	<0.02	0.02	<0.02	0.002
W21R–4749	28311	710	720	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	9.14	<0.02	0.02	<0.02	0.002
W21R–4749	28312	720	730	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	9.1	0.02	0.02	<0.02	—
W21R–4749	28313	730	740	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	9.35	<0.02	0.01	<0.02	—
W21R–4749	28314	740	750	WASTE	FALSE	Monzonite	<0.6	3	#N/A	3	9.21	0.02	0.01	<0.02	—
W21R–4750	28336	190	200	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	7.9	0.02	0.02	<0.02	—
W21R–4750	28372	500	510	WASTE	TRUE	Monzonite	0.9	39.9	44.3	39	8.73	0.04	0.01	0.03	—
W21R–4750	28375	510	520	WASTE	TRUE	Monzonite	<0.6	2.2	#N/A	2.2	8.7	0.03	0.03	<0.02	—
W21R–4750	28376	520	530	WASTE	FALSE	Monzonite	<0.6	6.5	#N/A	6.5	8.93	0.03	0.03	<0.02	0.002
W21R–4750	28377	530	540	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	9.04	<0.02	0.02	<0.02	—
W21R–4750	28378	540	550	WASTE	FALSE	Monzonite	<0.6	4.8	#N/A	4.8	8.99	<0.02	0.02	<0.02	—
W21R–4750	28379	550	560	WASTE	FALSE	Monzonite	<0.6	3	#N/A	3	8.94	<0.02	0.02	<0.02	0.001
W21R–4750	28380	560	570	WASTE	TRUE	Monzonite	<0.6	2.8	#N/A	2.8	8.93	0.02	0.03	<0.02	—
W21R–4750	28381	570	580	WASTE	TRUE	Monzonite	<0.6	2	#N/A	2	9.12	0.03	0.03	<0.02	—
W21R–4750	28382	580	590	WASTE	FALSE	Monzonite	<0.6	3.3	#N/A	3.3	8.96	0.02	0.02	<0.02	0.002
W21R–4750	28383	590	600	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	9.1	0.03	0.02	<0.02	0.001
W21R–4751	28437			WASTE	FALSE	Monzonite	<0.6	2.7	#N/A	2.7	8.55	<0.02	0.02	<0.02	0.003
W21R–4751	28441			ORE	TRUE	Monzonite	<0.6	1	#N/A	1	7.77	<0.02	0.01	<0.02	0.017

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 3 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4753	28554	460	470	WASTE	FALSE	Monzonite	<0.6	60.6	#N/A	60.6	8.71	<0.02	0.01	<0.02	0.008
W21R–4753	28558	500	510	ORE	FALSE	Monzonite	<0.6	5.3	#N/A	5.3	9.37	<0.02	0.01	<0.02	0.019
W21R–4753	28564	540	550	WASTE	FALSE	Monzonite	2.2	6.2	2.8	4	8.55	0.11	0.04	0.07	0.007
W21R–4753	28568	580	590	ORE	FALSE	Monzonite	<0.6	5.2	#N/A	5.2	9.37	0.02	0.01	<0.02	0.011
W21R–4753	28572	620	630	WASTE	FALSE	Monzonite	<0.6	3.3	#N/A	3.3	9.17	<0.02	0.01	<0.02	0.006
W21R–4753	28576	660	670	WASTE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	9.48	<0.02	0.01	<0.02	0.01
W21R–4753	28585	700	710	WASTE	FALSE	Monzonite	<0.6	3	#N/A	3	9.63	<0.02	0.02	<0.02	—
W21R–4754	28645	430	440	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	9.35	<0.02	0.01	<0.02	0.003
W21R–4754	28649	470	480	ORE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	9.31	<0.02	0.01	<0.02	0.018
W21R–4754	28655	510	520	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.3	<0.02	0.01	<0.02	0.002
W21R–4754	28659	550	560	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	9.1	<0.02	0.01	<0.02	0.001
W21R–4754	28663	590	600	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	9.21	<0.02	0.02	<0.02	0.001
W21R–4755	28714	430	440	WASTE	FALSE	Monzonite	<0.6	4	#N/A	4	9.29	<0.02	0.02	<0.02	0.008
W21R–4755	28718	470	480	WASTE	FALSE	Monzonite	<0.6	4.5	#N/A	4.5	9.24	<0.02	0.01	<0.02	0.005
W21R–4756	28756	330	340	ORE	FALSE	Monzonite	<0.6	11.8	#N/A	11.8	9.25	0.03	0.02	<0.02	0.052
W21R–4756	28765	370	380	ORE	FALSE	Monzonite	0.6	6	10	5.4	9.16	0.04	0.02	0.02	0.06
W21R–4756	28769	410	420	ORE	FALSE	Monzonite	<0.6	2	#N/A	2	9.29	<0.02	0.01	<0.02	0.048
W21R–4756	28773	450	460	WASTE	FALSE	Monzonite	<0.6	3.2	#N/A	3.2	9.25	<0.02	0.01	<0.02	0.006
W21R–4756	28787	570	580	WASTE	FALSE	Monzonite	<0.6	15.8	#N/A	15.8	9.32	0.03	0.02	<0.02	—
W21R–4757	28798	50	60	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	8.12	0.09	0.09	<0.02	—
W21R–4757	28841	410	420	WASTE	FALSE	Monzonite	<0.6	14.8	#N/A	14.8	8.64	0.04	0.03	<0.02	—
W21R–4757	28845	450	460	WASTE	FALSE	Monzonite	<0.6	4.9	#N/A	4.9	8.95	<0.02	0.01	<0.02	0.002
W21R–4757	28849	490	500	WASTE	FALSE	Monzonite	<0.6	8.2	#N/A	8.2	9.15	0.03	0.02	<0.02	0.003
W21R–4757	28855	530	540	ORE	FALSE	Monzonite	<0.6	3.3	#N/A	3.3	9.49	<0.02	0.01	<0.02	0.013
W21R–4757	28859	570	580	WASTE	FALSE	Monzonite	2.8	5.8	2.1	3	8.83	0.12	0.03	0.09	—
W21R–4757	28863	610	620	WASTE	FALSE	Monzonite	5	6.8	1.4	1.8	9.3	0.18	0.02	0.16	0.003
W21R–4757	28867	650	660	WASTE	FALSE	Monzonite	<0.6	3.3	#N/A	3.3	9.47	<0.02	0.01	<0.02	0.002
W21R–4757	28873	690	700	WASTE	FALSE	Monzonite	<0.6	3	#N/A	3	9.6	<0.02	0.01	<0.02	0.003
W21R–4757	28884	770	780	WASTE	FALSE	Monzonite	3.8	143	37.6	139	9.44	0.14	0.02	0.12	—
W21R–4758	28922	330	340	WASTE	FALSE	Monzonite	<0.6	5.7	#N/A	5.7	9.18	0.02	0.02	<0.02	0.003
W21R–4758	28931	370	380	ORE	FALSE	Monzonite	<0.6	3.7	#N/A	3.7	9.24	0.02	0.02	<0.02	0.037
W21R–4759	28990	460	470	WASTE	FALSE	Monzonite	<0.6	9.7	#N/A	9.7	9.44	<0.02	0.01	<0.02	0.003
W21R–4759	28994	500	510	ORE	FALSE	Monzonite	5.6	5.5	1	–0.1	8.78	0.2	0.02	0.18	0.039
W21R–4759	29000	540	550	WASTE	FALSE	Monzonite	<0.6	10.9	#N/A	10.9	9.25	0.03	0.02	<0.02	—

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 4 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4759	29004	580	590	WASTE	FALSE	Monzonite	0.9	6.8	7.6	5.9	9.16	0.05	0.02	0.03	0.003
W21R–4759	29008	620	630	WASTE	FALSE	Monzonite	<0.6	3.5	#N/A	3.5	9.53	0.02	0.01	<0.02	0.005
W21R–4759	29012	660	670	WASTE	FALSE	Monzonite	<0.6	2.7	#N/A	2.7	9.6	0.02	0.01	<0.02	0.004
W21R–4761	29114	160	170	WASTE	FALSE	Monzonite	<0.6	25.4	#N/A	25.4	8.84	<0.02	0.01	<0.02	—
W21R–4761	29120	200	210	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.43	<0.02	0.02	<0.02	—
W21R–4761	29124	240	250	WASTE	FALSE	Monzonite	0.6	2.5	4.2	1.9	9.41	0.04	0.02	0.02	0.001
W21R–4761	29128	280	290	WASTE	FALSE	Monzonite	1.9	2	1.1	0.1	9.21	0.09	0.03	0.06	—
W21R–4761	29132	320	330	WASTE	FALSE	Monzonite	10	2.5	0.3	–7.5	8.83	0.35	0.03	0.32	—
W21R–4761	29141	360	370	WASTE	FALSE	Monzonite	17.2	2.5	0.1	–14.7	8.23	0.58	0.03	0.55	—
W21R–4761	29145	400	410	WASTE	FALSE	Monzonite	4.1	4	1	–0.1	8.21	0.16	0.03	0.13	—
W21R–4762	29174	160	170	WASTE	FALSE	Monzonite	<0.6	10	#N/A	10	9.21	0.02	0.02	<0.02	—
W21R–4762	29180	200	210	WASTE	FALSE	Monzonite	<0.6	5.3	#N/A	5.3	9.85	<0.02	0.01	<0.02	—
W21R–4762	29184	240	250	WASTE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	9.68	<0.02	0.02	<0.02	—
W21R–4762	29188	280	290	WASTE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	9.24	0.02	0.02	<0.02	—
W21R–4762	29192	320	330	WASTE	FALSE	Monzonite	1.9	2.5	1.3	0.6	9.21	0.08	0.02	0.06	—
W21R–4762	29201	360	370	WASTE	FALSE	Monzonite	11.3	3.8	0.3	–7.5	8.8	0.38	0.02	0.36	—
W21R–4762	29205	400	410	WASTE	FALSE	Monzonite	5.9	8.3	1.4	2.4	9.03	0.22	0.03	0.19	0.001
W21R–4762	29223	560	570	WASTE	FALSE	Monzonite	<0.6	10.6	#N/A	10.6	9.54	0.03	0.02	<0.02	—
W21R–4762	29227	600	610	WASTE	FALSE	Monzonite	4.4	9.8	2.2	5.4	9.29	0.17	0.03	0.14	—
W21R–4762	29237	680	690	ORE	FALSE	Monzonite	<0.6	5.5	#N/A	5.5	8.74	0.02	0.01	<0.02	0.117
W21R–4762	29244	720	730	ORE	TRUE	Monzonite	0.6	5	8.3	4.4	9.26	0.03	0.01	0.02	0.038
W21R–4762	29248	760	770	ORE	FALSE	Monzonite	<0.6	4.8	#N/A	4.8	9.22	<0.02	0.01	<0.02	0.029
W21R–4763	29252	0	10	WASTE	TRUE	Monzonite	<0.6	0.8	#N/A	0.8	6.85	0.02	0.02	<0.02	0.005
W21R–4763	29268	160	170	WASTE	FALSE	Monzonite	0.6	57.3	95.5	56.7	8.49	0.04	0.02	0.02	—
W21R–4763	29274	200	210	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	8.71	0.03	0.02	<0.02	—
W21R–4763	29278	240	250	WASTE	FALSE	Monzonite	2.2	2.8	1.3	0.6	8.69	0.1	0.03	0.07	—
W21R–4763	29284	300	310	WASTE	FALSE	Monzonite	<0.6	0.7	#N/A	0.7	8.68	0.03	0.02	<0.02	—
W21R–4763	29290	340	350	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	8.7	0.03	0.03	<0.02	0.002
W21R–4763	29297	380	390	WASTE	TRUE	Monzonite	3.1	4	1.3	0.9	8.65	0.13	0.03	0.1	—
W21R–4763	29309	500	510	WASTE	TRUE	Monzonite	<0.6	4.5	#N/A	4.5	8.41	<0.02	0.02	<0.02	—
W21R–4763	29315	540	550	WASTE	TRUE	Monzonite	0.9	3.8	4.2	2.9	8.71	0.05	0.02	0.03	—
W21R–4764	29346	180	190	WASTE	FALSE	Monzonite	<0.6	6.8	#N/A	6.8	9.32	<0.02	0.02	<0.02	—
W21R–4764	29350	220	230	WASTE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	9.29	0.04	0.03	<0.02	—
W21R–4764	29354	260	270	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	9.48	0.03	0.02	<0.02	—

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 5 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4764	29358	300	310	WASTE	FALSE	Monzonite	<0.6	3	#N/A	3	9.37	0.03	0.04	<0.02	—
W21R–4764	29364	340	350	WASTE	FALSE	Monzonite	1.3	1.5	1.2	0.2	8.9	0.06	0.02	0.04	—
W21R–4764	29371	380	390	WASTE	TRUE	Monzonite	2.8	4.7	1.7	1.9	8.72	0.12	0.03	0.09	—
W21R–4764	29375	420	430	WASTE	TRUE	Monzonite	<0.6	7.2	#N/A	7.2	8.6	<0.02	0.01	<0.02	—
W21R–4764	29389	540	550	WASTE	TRUE	Monzonite	0.6	2.2	3.7	1.6	9.36	0.04	0.02	0.02	—
W21R–4764	29397	620	630	WASTE	FALSE	Monzonite	<0.6	56	#N/A	56	8.68	0.02	0.02	<0.02	0.005
W21R–4764	29401	660	670	ORE	FALSE	Monzonite	<0.6	9	#N/A	9	9.24	<0.02	0.01	<0.02	0.018
W21R–4764	29410	700	710	WASTE	FALSE	Monzonite	<0.6	6.3	#N/A	6.3	9.34	0.03	0.02	<0.02	0.009
W21R–4764	29414	740	750	WASTE	FALSE	Monzonite	<0.6	14	#N/A	14	8.88	0.04	0.03	<0.02	0.003
W21R–4764	29418	780	790	ORE	FALSE	Monzonite	<0.6	3.5	#N/A	3.5	9.17	<0.02	0.01	<0.02	0.013
W21R–4765	29476	470	480	WASTE	FALSE	Monzonite	0.6	5.5	9.2	4.9	8.7	0.03	0.01	0.02	0.004
W21R–4765	29482	510	520	ORE	FALSE	Monzonite	<0.6	3.8	#N/A	3.8	8.69	<0.02	0.01	<0.02	0.015
W21R–4765	29486	550	560	WASTE	TRUE	Monzonite	0.9	17.3	19.2	16.4	9.15	0.05	0.02	0.03	—
W21R–4765	29490	590	600	ORE	TRUE	Monzonite	0.6	5	8.3	4.4	9.25	0.03	0.01	0.02	0.012
W21R–4765	29494	630	640	WASTE	TRUE	Monzonite	<0.6	2.7	#N/A	2.7	9.31	0.02	0.01	<0.02	0.008
W21R–4765	29498	670	680	WASTE	TRUE	Monzonite	<0.6	2.8	#N/A	2.8	9.28	<0.02	0.01	<0.02	0.004
W21R–4765	29507	710	720	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	9.27	0.02	0.01	<0.02	—
W21R–4766	29537	190	200	WASTE	FALSE	Monzonite	<0.6	5.4	#N/A	5.4	8.55	0.04	0.04	<0.02	—
W21R–4766	29541	230	240	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	8.72	0.02	0.01	<0.02	—
W21R–4766	29545	270	280	WASTE	FALSE	Monzonite	0.6	2.7	4.5	2.1	9.03	0.03	0.01	0.02	—
W21R–4766	29549	310	320	WASTE	FALSE	Monzonite	2.2	2	0.9	–0.2	8.99	0.09	0.02	0.07	—
W21R–4766	29558	350	360	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	8.89	0.03	0.02	<0.02	—
W21R–4766	29562	390	400	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.18	<0.02	0.01	<0.02	—
W21R–4766	29576	510	520	WASTE	FALSE	Monzonite	<0.6	170	#N/A	170	8.69	0.04	0.03	<0.02	—
W21R–4766	29580	550	560	WASTE	FALSE	Monzonite	<0.6	3.5	#N/A	3.5	8.98	<0.02	0.02	<0.02	—
W21R–4767	29603	150	160	WASTE	FALSE	Monzonite	<0.6	4.7	#N/A	4.7	9.08	0.02	0.01	<0.02	—
W21R–4767	29609	190	200	WASTE	FALSE	Monzonite	<0.6	3	#N/A	3	9.13	0.03	0.02	<0.02	—
W21R–4767	29613	230	240	WASTE	FALSE	Monzonite	2.2	2.8	1.3	0.6	8.87	0.1	0.03	0.07	0.001
W21R–4767	29617	270	280	WASTE	FALSE	Monzonite	6.9	4	0.6	–2.9	8.69	0.24	0.02	0.22	—
W21R–4767	29621	310	320	WASTE	FALSE	Monzonite	1.9	4	2.1	2.1	8.59	0.08	0.02	0.06	—
W21R–4767	29630	350	360	WASTE	FALSE	Monzonite	6.9	3.3	0.5	–3.6	8.61	0.24	0.02	0.22	0.004
W21R–4767	29642	470	480	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	8.41	<0.02	0.02	<0.02	—
W21R–4767	29648	510	520	WASTE	FALSE	Monzonite	7.8	2.5	0.3	–5.3	8.31	0.27	0.02	0.25	—
W21R–4767	29656	590	600	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	8.55	<0.02	0.01	<0.02	0.004

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 6 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4767	29660	630	640	WASTE	FALSE	Monzonite	0.6	2.7	4.5	2.1	8.61	0.03	0.01	0.02	—
W21R–4767	29664	670	680	WASTE	FALSE	Monzonite	<0.6	3.5	#N/A	3.5	8.71	0.02	0.01	<0.02	0.001
W21R–4767	29673	710	720	WASTE	FALSE	Monzonite	1.6	5	3.1	3.4	8.75	0.07	0.02	0.05	—
W21R–4768	29699	150	160	WASTE	FALSE	Monzonite	<0.6	5.7	#N/A	5.7	9.05	<0.02	0.01	<0.02	—
W21R–4768	29705	190	200	WASTE	FALSE	Monzonite	<0.6	4.7	#N/A	4.7	8.74	<0.02	0.02	<0.02	—
W21R–4768	29709	230	240	WASTE	FALSE	Monzonite	<0.6	11.4	#N/A	11.4	8.55	0.02	0.02	<0.02	—
W21R–4768	29713	270	280	WASTE	FALSE	Monzonite	0.6	2.7	4.5	2.1	9.07	0.04	0.02	0.02	—
W21R–4768	29717	310	320	WASTE	FALSE	Monzonite	1.3	3	2.3	1.7	9.05	0.05	0.01	0.04	—
W21R–4768	29726	350	360	WASTE	FALSE	Monzonite	<0.6	3.3	#N/A	3.3	8.98	0.02	0.01	<0.02	—
W21R–4768	29730	390	400	WASTE	FALSE	Monzonite	9.1	4.5	0.5	–4.6	9.03	0.31	0.02	0.29	0.001
W21R–4768	29744	510	520	WASTE	FALSE	Monzonite	<0.6	2.2	#N/A	2.2	9.21	<0.02	0.01	<0.02	—
W21R–4768	29748	550	560	WASTE	FALSE	Monzonite	0.6	2.5	4.2	1.9	9.29	0.04	0.02	0.02	—
W21R–4768	29752	590	600	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	8.59	<0.02	0.01	<0.02	—
W21R–4768	29756	630	640	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	9.28	<0.02	0.01	<0.02	0.001
W21R–4769	29767	60	70	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	7.06	0.07	0.07	<0.02	—
W21R–4769	29814	460	470	WASTE	FALSE	Monzonite	0.6	14.4	24	13.8	8.41	0.03	0.01	0.02	0.006
W21R–4771	29898	50	60	WASTE	FALSE	Monzonite	<0.6	5.8	#N/A	5.8	8.67	<0.02	0.05	<0.02	—
W21R–4771	29920	250	260	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	9.42	0.03	0.02	<0.02	—
W21R–4771	29924	290	300	WASTE	FALSE	Monzonite	5.6	1.5	0.3	–4.1	8.78	0.2	0.02	0.18	—
W21R–4771	29928	330	340	WASTE	FALSE	Monzonite	0.6	1.7	2.8	1.1	9.33	0.04	0.02	0.02	—
W21R–4771	29936	360	370	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	9.09	0.03	0.02	<0.02	—
W21R–4771	29940	400	410	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	9.63	<0.02	0.01	<0.02	—
W21R–4771	29944	440	450	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	9.2	0.02	0.02	<0.02	—
W21R–4771	29948	480	490	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	9.14	<0.02	0.02	<0.02	—
W21R–4771	29958	560	570	WASTE	FALSE	Monzonite	5.3	10.2	1.9	4.9	8.83	0.2	0.03	0.17	—
W21R–4771	29962	600	610	WASTE	FALSE	Monzonite	0.9	5.5	6.1	4.6	8.8	0.06	0.03	0.03	0.004
W21R–4771	29966	640	650	WASTE	FALSE	Monzonite	0.6	132	219.7	131	8.64	0.03	0.01	0.02	0.004
W21R–4772	29984	140	150	WASTE	FALSE	Monzonite	<0.6	11.8	#N/A	11.8	9.2	0.02	0.02	<0.02	—
W21R–4772	29990	180	190	WASTE	FALSE	Monzonite	<0.6	8.8	#N/A	8.8	9.37	<0.02	0.02	<0.02	—
W21R–4772	29994	220	230	WASTE	FALSE	Monzonite	<0.6	5	#N/A	5	9.55	<0.02	0.01	<0.02	—
W21R–4772	29998	260	270	WASTE	FALSE	Monzonite	<0.6	6.6	#N/A	6.6	9.46	<0.02	0.02	<0.02	—
W21R–4772	30002	300	310	WASTE	FALSE	Monzonite	3.8	3.3	0.9	–0.5	8.97	0.15	0.03	0.12	—
W21R–4772	30008	340	350	WASTE	FALSE	Monzonite	6.6	3.3	0.5	–3.3	8.54	0.26	0.05	0.21	0.002
W21R–4772	30015	380	390	WASTE	FALSE	Monzonite	5	2.5	0.5	–2.5	8.88	0.19	0.03	0.16	—

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 7 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4772	30023	460	470	WASTE	FALSE	Monzonite	3.4	11.6	3.4	8.2	8.77	0.13	0.02	0.11	0.002
W21R-4772	30033	540	550	WASTE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	9.88	<0.02	0.02	<0.02	—
W21R-4772	30037	580	590	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	9.52	<0.02	0.01	<0.02	—
W21R-4772	30041	620	630	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.07	<0.02	0.01	<0.02	—
W21R-4773	30062	150	160	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	7.82	0.03	0.02	<0.02	—
W21R-4773	30101	470	480	WASTE	FALSE	Monzonite	<0.6	13.4	#N/A	13.4	9.45	0.02	0.02	<0.02	—
W21R-4773	30111	550	560	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	9.02	<0.02	0.01	<0.02	0.005
W21R-4773	30115	590	600	WASTE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	9.31	<0.02	0.01	<0.02	0.007
W21R-4773	30119	630	640	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	9.33	<0.02	0.01	<0.02	0.01
W21R-4773	30123	670	680	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	9.44	<0.02	0.01	<0.02	0.009
W21R-4773	30132	710	720	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	9.57	<0.02	0.01	<0.02	0.006
W21R-4773	30136	750	760	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	9.45	<0.02	0.01	<0.02	0.008
W21R-4774	30193	450	460	WASTE	TRUE	Monzonite	<0.6	27.6	#N/A	27.6	8.66	0.04	0.03	<0.02	—
W21R-4774	30203	530	540	WASTE	TRUE	Monzonite	<0.6	24	#N/A	24	9	0.03	0.03	<0.02	—
W21R-4774	30207	570	580	WASTE	TRUE	Monzonite	<0.6	8	#N/A	8	8.91	0.02	0.03	<0.02	—
W21R-4774	30211	610	620	WASTE	TRUE	Monzonite	<0.6	42.3	#N/A	42.3	9.09	0.02	0.02	<0.02	—
W21R-4774	30215	650	660	WASTE	TRUE	Monzonite	<0.6	142	#N/A	142	8.89	<0.02	0.01	<0.02	—
W21R-4774	30228	730	740	WASTE	TRUE	Monzonite	<0.6	2.3	#N/A	2.3	9.59	<0.02	0.01	<0.02	0.005
W21R-4775	30286	490	500	WASTE	FALSE	Monzonite	2.2	2	0.9	–0.2	8.72	0.11	0.04	0.07	0.005
W21R-4775	30296	570	580	WASTE	FALSE	Monzonite	<0.6	2.7	#N/A	2.7	9.25	<0.02	0.02	<0.02	—
W21R-4775	30300	610	620	WASTE	FALSE	Monzonite	<0.6	3.5	#N/A	3.5	8.46	0.02	0.03	<0.02	—
W21R-4775	30304	650	660	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	8.93	<0.02	0.02	<0.02	—
W21R-4775	30310	690	700	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	9.01	<0.02	0.01	<0.02	0.006
W21R-4775	30317	730	740	WASTE	FALSE	Monzonite	<0.6	2.2	#N/A	2.2	9.12	0.02	0.02	<0.02	—
W21R-4775	30321	770	780	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	9.09	<0.02	0.02	<0.02	0.004
W21R-4776	30381	500	510	WASTE	FALSE	Monzonite	6.3	3.8	0.6	–2.5	8.65	0.22	0.02	0.2	—
W21R-4776	30391	580	590	WASTE	FALSE	Monzonite	<0.6	8.7	#N/A	8.7	8.77	<0.02	0.01	<0.02	—
W21R-4776	30395	620	630	WASTE	FALSE	Monzonite	<0.6	4.5	#N/A	4.5	9.24	0.02	0.02	<0.02	—
W21R-4776	30408	700	710	WASTE	FALSE	Monzonite	<0.6	3.2	#N/A	3.2	9.37	<0.02	0.01	<0.02	0.005
W21R-4776	30412	740	750	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	9.46	<0.02	0.01	<0.02	0.001
W21R-4776	30416	780	790	ORE	FALSE	Monzonite	<0.6	2.2	#N/A	2.2	9.12	<0.02	<0.01	<0.02	0.013
W21R-4777	30478	510	520	WASTE	TRUE	Monzonite	1.6	9.2	5.8	7.6	8.55	0.07	0.02	0.05	0.004
W21R-4777	30482	550	560	WASTE	TRUE	Monzonite	<0.6	2	#N/A	2	8.43	<0.02	0.02	<0.02	0.009
W21R-4777	30486	590	600	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.38	<0.02	0.01	<0.02	0.005

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 8 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4777	30490	630	640	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	8.41	<0.02	0.01	<0.02	0.003
W21R-4777	30494	670	680	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	8.44	<0.02	0.01	<0.02	0.007
W21R-4778	30506	40	50	WASTE	FALSE	Monzonite	<0.6	0	#N/A	0	7.62	0.09	0.14	<0.02	—
W21R-4778	30553	440	450	WASTE	FALSE	Monzonite	<0.6	7.7	#N/A	7.7	8.85	0.02	0.01	<0.02	—
W21R-4778	30557	480	490	WASTE	FALSE	Monzonite	<0.6	5	#N/A	5	8.96	0.02	0.02	<0.02	0.001
W21R-4778	30563	520	530	ORE	FALSE	Monzonite	<0.6	4.2	#N/A	4.2	9.04	0.03	0.02	<0.02	0.011
W21R-4778	30567	560	570	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9	<0.02	0.01	<0.02	0.01
W21R-4778	30571	600	610	WASTE	FALSE	Monzonite	4.1	4.7	1.1	0.6	8.97	0.16	0.03	0.13	0.002
W21R-4778	30575	640	650	WASTE	FALSE	Monzonite	4.1	2.5	0.6	–1.6	8.87	0.17	0.04	0.13	0.01
W21R-4779	30598	170	180	WASTE	FALSE	Monzonite	0.6	1.7	2.8	1.1	8.23	0.04	0.02	0.02	—
W21R-4779	30599	180	190	WASTE	FALSE	Monzonite	1.6	1.2	0.8	–0.4	8.24	0.09	0.04	0.05	—
W21R-4779	30640	520	530	WASTE	FALSE	Monzonite	<0.6	8.8	#N/A	8.8	8.35	<0.02	0.01	<0.02	—
W21R-4779	30641	530	540	WASTE	FALSE	Monzonite	<0.6	4.5	#N/A	4.5	8.38	<0.02	0.01	<0.02	—
W21R-4779	30642	540	550	WASTE	FALSE	Monzonite	<0.6	4.5	#N/A	4.5	8.35	<0.02	0.01	<0.02	—
W21R-4779	30643	550	560	WASTE	FALSE	Monzonite	<0.6	5	#N/A	5	8.37	<0.02	0.01	<0.02	—
W21R-4779	30644	560	570	WASTE	FALSE	Monzonite	<0.6	4	#N/A	4	8.49	<0.02	0.02	<0.02	—
W21R-4779	30645	570	580	WASTE	FALSE	Monzonite	<0.6	3.3	#N/A	3.3	8.48	<0.02	0.01	<0.02	—
W21R-4779	30646	580	590	WASTE	FALSE	Monzonite	<0.6	3.8	#N/A	3.8	8.45	<0.02	0.01	<0.02	0.001
W21R-4779	30647	590	600	WASTE	FALSE	Monzonite	<0.6	3.3	#N/A	3.3	8.43	<0.02	0.01	<0.02	—
W21R-4779	30648	600	610	WASTE	FALSE	Monzonite	<0.6	3.2	#N/A	3.2	8.53	<0.02	0.01	<0.02	0.002
W21R-4779	30649	610	620	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	8.53	<0.02	0.01	<0.02	0.005
W21R-4779	30650	620	630	WASTE	TRUE	Monzonite	<0.6	1.7	#N/A	1.7	8.43	<0.02	0.01	<0.02	0.004
W21R-4779	30651	630	640	WASTE	TRUE	Monzonite	<0.6	1.3	#N/A	1.3	8.48	<0.02	0.01	<0.02	0.001
W21R-4779	30652	640	650	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	8.51	<0.02	0.01	<0.02	—
W21R-4779	30653	650	660	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	8.46	<0.02	0.01	<0.02	—
W21R-4779	30654	660	670	WASTE	FALSE	Monzonite	<0.6	3	#N/A	3	8.44	<0.02	0.01	<0.02	—
W21R-4779	30655	670	680	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	8.54	<0.02	0.01	<0.02	—
W21R-4779	30658	680	690	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	8.42	<0.02	0.01	<0.02	—
W21R-4779	30659	690	700	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	8.49	<0.02	0.01	<0.02	—
W21R-4780	30720	500	510	WASTE	FALSE	Monzonite	<0.6	5.2	#N/A	5.2	8.43	0.02	0.02	<0.02	—
W21R-4780	30723	510	520	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	8.45	<0.02	0.02	<0.02	—
W21R-4780	30724	520	530	WASTE	FALSE	Monzonite	<0.6	5	#N/A	5	8.48	0.03	0.03	<0.02	—
W21R-4780	30725	530	540	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	9.05	<0.02	0.01	<0.02	0.002
W21R-4780	30726	540	550	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.09	<0.02	0.01	<0.02	0.001



Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 9 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4780	30727	550	560	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.12	<0.02	0.01	<0.02	0.002
W21R–4780	30728	560	570	WASTE	FALSE	Monzonite	<0.6	2.7	#N/A	2.7	8.99	0.02	0.02	<0.02	0.004
W21R–4780	30729	570	580	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	8.75	0.03	0.02	<0.02	0.002
W21R–4780	30730	580	590	WASTE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	8.73	0.02	0.02	<0.02	0.004
W21R–4780	30731	590	600	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	9.1	<0.02	0.01	<0.02	0.005
W21R–4781	30763	260	270	ORE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	7.65	0.08	0.09	<0.02	0.02
W21R–4781	30764	270	280	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	7.89	<0.02	0.02	<0.02	0.003
W21R–4781	30765	280	290	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	8.11	0.02	0.03	<0.02	0.008
W21R–4781	30766	290	300	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	8.47	<0.02	0.02	<0.02	0.004
W21R–4781	30767	300	310	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.48	<0.02	0.01	<0.02	0.003
W21R–4781	30768	310	320	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	8.49	<0.02	0.02	<0.02	0.004
W21R–4781	30769	320	330	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	8.51	<0.02	0.03	<0.02	0.007
W21R–4781	30770	330	340	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	8.49	0.02	0.03	<0.02	0.007
W21R–4781	30773	340	350	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	8.48	0.02	0.03	<0.02	0.009
W21R–4781	30777	350	360	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	8.77	0.03	0.02	<0.02	0.009
W21R–4781	30778	360	370	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	8.81	<0.02	0.02	<0.02	0.006
W21R–4781	30779	370	380	WASTE	TRUE	Monzonite	<0.6	1	#N/A	1	8.8	0.02	0.02	<0.02	0.004
W21R–4781	30780	380	390	WASTE	TRUE	Monzonite	<0.6	1.2	#N/A	1.2	8.47	0.03	0.03	<0.02	0.002
W21R–4781	30781	390	400	WASTE	TRUE	Monzonite	<0.6	1.3	#N/A	1.3	8.57	0.03	0.03	<0.02	—
W21R–4781	30782	400	410	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.6	0.02	0.03	<0.02	0.005
W21R–4781	30783	410	420	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	8.75	0.02	0.03	<0.02	0.005
W21R–4781	30784	420	430	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.77	0.03	0.05	<0.02	0.005
W21R–4781	30785	430	440	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.71	0.03	0.04	<0.02	0.005
W21R–4781	30786	440	450	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.89	0.03	0.04	<0.02	0.002
W21R–4781	30787	450	460	WASTE	FALSE	Monzonite	<0.6	0.7	#N/A	0.7	8.84	0.02	0.03	<0.02	0.002
W21R–4781	30788	460	470	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	8.51	0.03	0.04	<0.02	0.003
W21R–4781	30789	470	480	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	8.43	0.03	0.04	<0.02	—
W21R–4781	30790	480	490	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	8.09	0.07	0.06	<0.02	0.001
W21R–4783	30920	220	230	WASTE	FALSE	Monzonite	<0.6	0.7	#N/A	0.7	7.68	<0.02	0.01	<0.02	—
W21R–4783	30921	230	240	WASTE	TRUE	Monzonite	<0.6	0.8	#N/A	0.8	7.69	<0.02	<0.01	<0.02	—
W21R–4783	30922	240	250	WASTE	TRUE	Monzonite	0.6	1.5	2.5	0.9	7.55	0.04	0.02	0.02	—
W21R–4783	30923	250	260	WASTE	FALSE	Monzonite	2.5	1.2	0.5	–1.3	7.61	0.09	0.01	0.08	—
W21R–4783	30924	260	270	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	7.63	<0.02	0.01	<0.02	—
W21R–4783	30925	270	280	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	7.65	<0.02	<0.01	<0.02	—

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 10 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4783	30926	280	290	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	7.71	<0.02	0.02	<0.02	—
W21R–4783	30927	290	300	WASTE	FALSE	Monzonite	<0.6	2.2	#N/A	2.2	7.6	<0.02	0.02	<0.02	—
W21R–4783	30928	300	310	WASTE	FALSE	Monzonite	<0.6	4.2	#N/A	4.2	7.78	<0.02	0.02	<0.02	—
W21R–4783	30929	310	320	WASTE	FALSE	Monzonite	<0.6	3	#N/A	3	8.03	<0.02	<0.01	<0.02	—
W21R–4783	30930	320	330	WASTE	FALSE	Monzonite	<0.6	4	#N/A	4	8.11	<0.02	0.01	<0.02	—
W21R–4783	30931	330	340	WASTE	FALSE	Monzonite	<0.6	2	#N/A	2	8.15	<0.02	0.01	<0.02	—
W21R–4783	30934	340	350	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	7.92	0.03	0.03	<0.02	—
W21R–4783	30938	350	360	WASTE	TRUE	Monzonite	<0.6	1.3	#N/A	1.3	7.79	<0.02	0.03	<0.02	—
W21R–4783	30939	360	370	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	7.79	0.03	0.04	<0.02	—
W21R–4783	30940	370	380	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	7.85	<0.02	0.02	<0.02	—
W21R–4783	30941	380	390	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	7.69	<0.02	0.02	<0.02	—
W21R–4783	30942	390	400	WASTE	TRUE	Monzonite	<0.6	1.3	#N/A	1.3	7.58	<0.02	0.02	<0.02	—
W21R–4783	30943	400	410	WASTE	TRUE	Monzonite	<0.6	1.3	#N/A	1.3	7.88	<0.02	0.01	<0.02	—
W21R–4783	30944	410	420	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	8.05	<0.02	0.02	<0.02	—
W21R–4783	30945	420	430	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	8.47	<0.02	0.02	<0.02	—
W21R–4783	30946	430	440	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	8.81	<0.02	0.02	<0.02	0.01
W21R–4783	30947	440	450	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	8.63	<0.02	0.01	<0.02	0.005
W21R–4783	30948	450	460	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	8.18	<0.02	0.01	<0.02	0.003
W21R–4783	30965	600	610	WASTE	FALSE	Monzonite	0.9	38.8	43.11111111	37.9	8.25	0.04	0.01	0.03	—
W21R–4783	30966	610	620	WASTE	FALSE	Monzonite	<0.6	8.5	#N/A	8.5	8.21	<0.02	0.01	<0.02	—
W21R–4784	31014	320	330	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	8.41	<0.02	0.01	<0.02	—
W21R–4784	31015	330	340	WASTE	TRUE	Monzonite	<0.6	1	#N/A	1	8.39	<0.02	0.01	<0.02	—
W21R–4784	31018	340	350	WASTE	TRUE	Monzonite	<0.6	1.3	#N/A	1.3	8.19	<0.02	0.01	<0.02	—
W21R–4784	31022	350	360	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	8.22	<0.02	0.01	<0.02	—
W21R–4784	31023	360	370	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	8.19	<0.02	0.01	<0.02	—
W21R–4784	31024	370	380	WASTE	FALSE	Monzonite	<0.6	2.7	#N/A	2.7	8.21	0.02	0.03	<0.02	—
W21R–4784	31025	380	390	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	8.17	<0.02	0.02	<0.02	—
W21R–4784	31026	390	400	WASTE	FALSE	Monzonite	<0.6	3.5	#N/A	3.5	8.25	<0.02	0.01	<0.02	—
W21R–4784	31027	400	410	WASTE	TRUE	Monzonite	<0.6	8.8	#N/A	8.8	8.18	<0.02	0.01	<0.02	—
W21R–4784	31045	560	570	WASTE	TRUE	Monzonite	<0.6	15.5	#N/A	15.5	8.37	0.02	0.01	<0.02	0.001
W21R–4784	31046	570	580	WASTE	TRUE	Monzonite	<0.6	6.3	#N/A	6.3	8.28	0.02	0.01	<0.02	—
W21R–4784	31047	580	590	WASTE	FALSE	Monzonite	<0.6	4.5	#N/A	4.5	8.21	<0.02	0.01	<0.02	—
W21R–4784	31048	590	600	WASTE	TRUE	Monzonite	<0.6	3.5	#N/A	3.5	8.24	<0.02	0.01	<0.02	—
W21R–4785	31065	130	140	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	7.55	<0.02	0.01	<0.02	0.002

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 11 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4785	31067	150	160	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	7.66	<0.02	0.01	<0.02	—
W21R–4785	31068	160	170	WASTE	FALSE	Monzonite	<0.6	5.8	#N/A	5.8	7.83	<0.02	0.01	<0.02	—
W21R–4785	31087	330	340	WASTE	TRUE	Monzonite	1.6	1.5	0.9	–0.1	7.83	0.08	0.03	0.05	—
W21R–4785	31090	340	350	WASTE	FALSE	Monzonite	0.6	1	1.7	0.4	7.65	0.04	0.02	0.02	—
W21R–4785	31094	350	360	WASTE	FALSE	Monzonite	0.9	1	1.1	0.1	7.91	0.07	0.04	0.03	—
W21R–4785	31095	360	370	WASTE	FALSE	Monzonite	0.6	1.8	3	1.2	8.3	0.04	0.02	0.02	0.002
W21R–4785	31096	370	380	WASTE	FALSE	Monzonite	0.9	1.5	1.7	0.6	7.95	0.05	0.02	0.03	—
W21R–4785	31097	380	390	WASTE	FALSE	Monzonite	0.6	2	3.3	1.4	8.64	0.04	0.02	0.02	—
W21R–4785	31098	390	400	WASTE	TRUE	Monzonite	0.6	1.5	2.5	0.9	8.55	0.05	0.03	0.02	—
W21R–4785	31099	400	410	WASTE	TRUE	Monzonite	<0.6	1.3	#N/A	1.3	8.79	0.03	0.02	<0.02	0.001
W21R–4785	31100	410	420	WASTE	TRUE	Monzonite	<0.6	1.2	#N/A	1.2	8.67	0.02	0.02	<0.02	0.001
W21R–4785	31101	420	430	WASTE	TRUE	Monzonite	<0.6	1.5	#N/A	1.5	8.36	<0.02	0.01	<0.02	0.002
W21R–4785	31102	430	440	WASTE	TRUE	Monzonite	<0.6	1	#N/A	1	8.89	0.02	0.01	<0.02	—
W21R–4785	31103	440	450	WASTE	TRUE	Monzonite	0.6	2.7	4.5	2.1	8.38	0.04	0.02	0.02	0.001
W21R–4786	31145	190	200	WASTE	TRUE	Monzonite	<0.6	2	#N/A	2	7.2	<0.02	0.02	<0.02	0.002
W21R–4786	31146	200	210	WASTE	TRUE	Monzonite	<0.6	1.8	#N/A	1.8	6.94	0.04	0.03	<0.02	—
W21R–4786	31147	210	220	WASTE	TRUE	Monzonite	<0.6	0.5	#N/A	0.5	6.9	<0.02	0.03	<0.02	—
W21R–4786	31157	310	320	WASTE	FALSE	Monzonite	<0.6	18.9	#N/A	18.9	8.86	<0.02	0.01	<0.02	0.005
W21R–4786	31158	320	330	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	9.12	0.03	0.03	<0.02	0.006
W21R–4786	31159	330	340	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.95	0.06	0.05	<0.02	0.007
W21R–4786	31162	340	350	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	8.68	0.07	0.07	<0.02	—
W21R–4786	31167	360	370	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.85	<0.02	0.01	<0.02	0.005
W21R–4786	31168	370	380	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	8.81	0.02	0.03	<0.02	0.005
W21R–4786	31169	380	390	ORE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	8.94	0.03	0.03	<0.02	0.012
W21R–4786	31170	390	400	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.93	<0.02	0.02	<0.02	0.004
W21R–4786	31171	400	410	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.92	<0.02	0.01	<0.02	0.008
W21R–4786	31172	410	420	WASTE	TRUE	Monzonite	<0.6	1.3	#N/A	1.3	8.98	0.02	0.02	<0.02	0.01
W21R–4786	31173	420	430	WASTE	TRUE	Monzonite	<0.6	1	#N/A	1	9.03	0.02	0.02	<0.02	0.006
W21R–4786	31174	430	440	WASTE	TRUE	Monzonite	<0.6	1.5	#N/A	1.5	8.89	<0.02	0.01	<0.02	0.005
W21R–4786	31175	440	450	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	8.74	<0.02	0.02	<0.02	0.004
W21R–4786	31176	450	460	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.72	0.02	0.02	<0.02	0.006
W21R–4786	31177	460	470	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.83	0.03	0.02	<0.02	0.007
W21R–4786	31178	470	480	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	8.37	0.03	0.04	<0.02	0.002
W21R–4786	31179	480	490	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	8.41	0.05	0.05	<0.02	—

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 12 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4786	31180	490	500	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	8.49	0.07	0.06	<0.02	—
W21R–4786	31181	500	510	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.61	0.06	0.06	<0.02	0.002
W21R–4786	31184	510	520	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	8.63	0.04	0.03	<0.02	—
W21R–4786	31185	520	530	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	8.53	0.06	0.05	<0.02	—
W21R–4786	31186	530	540	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	8.64	0.05	0.05	<0.02	—
W21R–4786	31187	540	550	WASTE	FALSE	Monzonite	1.6	1	0.6	–0.6	8.32	0.14	0.09	0.05	—
W21R–4786	31188	550	560	WASTE	FALSE	Monzonite	1.3	1	0.8	–0.3	8.53	0.12	0.08	0.04	—
W21R–4787	31228	300	310	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	8.47	0.13	0.14	<0.02	0.002
W21R–4787	31229	310	320	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	8.44	0.02	0.02	<0.02	—
W21R–4787	31230	320	330	WASTE	FALSE	Monzonite	0.6	1.5	2.5	0.9	8.14	0.05	0.03	0.02	—
W21R–4787	31231	330	340	WASTE	TRUE	Monzonite	0.6	0.8	1.3	0.2	8.54	0.07	0.05	0.02	0.002
W21R–4787	31234	340	350	WASTE	TRUE	Monzonite	0.6	1	1.7	0.4	8.48	0.06	0.04	0.02	0.002
W21R–4787	31238	350	360	WASTE	TRUE	Monzonite	0.9	0.5	0.6	–0.4	8.54	0.07	0.04	0.03	0.004
W21R–4787	31239	360	370	WASTE	TRUE	Monzonite	<0.6	1.5	#N/A	1.5	8.52	0.06	0.05	<0.02	0.002
W21R–4787	31240	370	380	WASTE	TRUE	Monzonite	0.6	1	1.7	0.4	8.77	0.06	0.04	0.02	0.004
W21R–4787	31241	380	390	ORE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	8.59	0.06	0.09	<0.02	0.012
W21R–4787	31242	390	400	WASTE	FALSE	Monzonite	0.9	1.8	2	0.9	8.61	0.1	0.07	0.03	0.008
W21R–4787	31243	400	410	WASTE	FALSE	Monzonite	0.9	0.7	0.8	–0.2	8.99	0.08	0.05	0.03	0.004
W21R–4787	31244	410	420	WASTE	FALSE	Monzonite	0.6	1	1.7	0.4	8.96	0.08	0.06	0.02	0.006
W21R–4787	31245	420	430	WASTE	TRUE	Monzonite	0.9	1	1.1	0.1	8.86	0.08	0.05	0.03	0.007
W21R–4787	31246	430	440	WASTE	FALSE	Monzonite	0.9	1.7	1.9	0.8	8.84	0.07	0.04	0.03	0.004
W21R–4787	31247	440	450	WASTE	FALSE	Monzonite	0.9	1.5	1.7	0.6	8.69	0.08	0.05	0.03	0.003
W21R–4787	31248	450	460	ORE	FALSE	Monzonite	0.6	1.2	2	0.6	8.8	0.07	0.05	0.02	0.011
W21R–4787	31249	460	470	WASTE	TRUE	Monzonite	0.6	1.5	2.5	0.9	8.7	0.08	0.06	0.02	0.005
W21R–4787	31250	470	480	WASTE	TRUE	Monzonite	0.9	1.8	2	0.9	8.7	0.07	0.04	0.03	0.003
W21R–4787	31251	480	490	WASTE	FALSE	Monzonite	0.9	2	2.2	1.1	8.51	0.09	0.06	0.03	0.008
W21R–4787	31252	490	500	WASTE	FALSE	Monzonite	0.9	2	2.2	1.1	8.74	0.07	0.04	0.03	0.005
W21R–4787	31253	500	510	WASTE	FALSE	Monzonite	0.9	2	2.2	1.1	8.48	0.09	0.06	0.03	0.005
W21R–4787	31256	510	520	WASTE	FALSE	Monzonite	1.3	1.8	1.4	0.5	7.39	0.34	0.3	0.04	0.003
W21R–4788	31284	160	170	WASTE	FALSE	Monzonite	0.6	4.3	7.2	3.7	6.95	0.05	0.03	0.02	—
W21R–4788	31300	300	310	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	8.79	0.03	0.02	<0.02	—
W21R–4788	31301	310	320	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.58	<0.02	0.01	<0.02	—
W21R–4788	31302	320	330	WASTE	TRUE	Monzonite	<0.6	1.3	#N/A	1.3	8.75	0.03	0.02	<0.02	—
W21R–4788	31303	330	340	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.52	0.08	0.08	<0.02	—

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 13 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4788	31310	350	360	WASTE	TRUE	Monzonite	<0.6	0.8	#N/A	0.8	8.09	0.03	0.03	<0.02	—
W21R–4788	31311	360	370	WASTE	TRUE	Monzonite	<0.6	1.3	#N/A	1.3	8.39	0.03	0.03	<0.02	—
W21R–4788	31312	370	380	WASTE	TRUE	Monzonite	<0.6	2.2	#N/A	2.2	8.6	0.02	0.02	<0.02	—
W21R–4788	31313	380	390	WASTE	FALSE	Monzonite	1.3	3.4	2.6	2.1	8.42	0.05	0.01	0.04	—
W21R–4788	31314	390	400	WASTE	FALSE	Monzonite	1.9	4	2.1	2.1	8.65	0.07	0.01	0.06	—
W21R–4788	31315	400	410	WASTE	TRUE	Monzonite	<0.6	1.3	#N/A	1.3	9.03	0.02	0.02	<0.02	0.005
W21R–4788	31316	410	420	WASTE	TRUE	Monzonite	<0.6	1	#N/A	1	8.6	<0.02	0.01	<0.02	—
W21R–4788	31317	420	430	WASTE	FALSE	Monzonite	0.6	1.5	2.5	0.9	8.47	0.04	0.02	0.02	0.004
W21R–4788	31318	430	440	WASTE	TRUE	Monzonite	<0.6	1.3	#N/A	1.3	8.91	0.03	0.02	<0.02	0.005
W21R–4788	31319	440	450	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	8.89	<0.02	0.02	<0.02	—
W21R–4788	31320	450	460	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	8.87	0.03	0.03	<0.02	0.005
W21R–4788	31321	460	470	WASTE	FALSE	Monzonite	<0.6	1	#N/A	1	8.77	0.03	0.02	<0.02	—
W21R–4788	31322	470	480	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.98	0.04	0.04	<0.02	0.002
W21R–4788	31323	480	490	WASTE	TRUE	Monzonite	<0.6	1.7	#N/A	1.7	8.9	0.05	0.04	<0.02	0.007
W21R–4788	31324	490	500	ORE	TRUE	Monzonite	<0.6	1	#N/A	1	8.9	0.07	0.06	<0.02	0.016
W21R–4788	31325	500	510	WASTE	FALSE	Monzonite	<0.6	1.8	#N/A	1.8	9.02	0.04	0.04	<0.02	0.004
W21R–4788	31328	510	520	WASTE	FALSE	Monzonite	<0.6	3	#N/A	3	8.05	0.05	0.04	<0.02	0.002
W21R–4791	31541	450	460	WASTE	TRUE	Monzonite	<0.6	13.4	#N/A	13.4	9.04	<0.02	0.01	<0.02	—
W21R–4791	31545	490	500	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	9.03	<0.02	0.01	<0.02	0.004
W21R–4792	31602	460	470	WASTE	FALSE	Monzonite	0.3	4.00	-999	4.00	9.27	0.01	0.01	0.01	0.004
W21R–4792	31606	500	510	ORE	FALSE	Monzonite	0.3	3.20	-999	3.20	9.25	0.03	0.02	0.01	0.03
W21R–4792	31612	540	550	WASTE	FALSE	Monzonite	1.3	7.50	5.8	6.20	9.34	0.06	0.02	0.04	—
W21R–4792	31616	580	590	WASTE	TRUE	Monzonite	0.3	2.70	-999	2.70	9.12	0.01	0.02	0.01	0.006
W21R–4792	31620	620	630	WASTE	TRUE	Monzonite	0.3	3.20	-999	3.20	8.97	0.01	0.02	0.01	—
W21R–4792	31624	660	670	WASTE	TRUE	Monzonite	0.3	2.30	-999	2.30	8.98	0.01	0.01	0.01	0.002
W21R–4792	31633	700	710	WASTE	TRUE	Monzonite	0.3	3.30	-999	3.30	9.49	0.01	0.01	0.01	—
W21R–4792	31637	740	750	WASTE	TRUE	Monzonite	0.3	491	-999	491	8.94	0.01	0.01	0.01	—
W21R–4794	31662	170	180	WASTE	FALSE	Monzonite	<0.6	3.2	#N/A	<0.6	3.20	<0.02	<0.01	<0.02	—
W21R–4794	31666	210	220	WASTE	FALSE	Monzonite	1.3	2.0	1.5	1.3	2.00	0.06	0.02	0.04	—
W21R–4794	31670	250	260	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	<0.6	2.50	<0.02	0.01	<0.02	—
W21R–4794	31674	290	300	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	<0.6	2.50	<0.02	<0.01	<0.02	—
W21R–4794	31678	330	340	WASTE	FALSE	Monzonite	<0.6	6.9	#N/A	<0.6	6.90	<0.02	<0.01	<0.02	—
W21R–4794	31699	490	500	WASTE	FALSE	Monzonite	<0.6	6.9	#N/A	<0.6	6.90	<0.02	0.01	<0.02	—
W21R–4795	31720	180	190	WASTE	FALSE	Monzonite	23.1	16.7	0.7	-6.4	9.05	0.76	0.02	0.74	—

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 14 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4795	31724	220	230	WASTE	FALSE	Monzonite	0.6	7.0	11.7	6.4	9.61	0.03	0.01	0.02	—
W21R-4795	31728	260	270	WASTE	FALSE	Monzonite	6.3	1.8	0.3	-4.5	8.86	0.21	0.01	0.20	—
W21R-4795	31732	300	310	WASTE	FALSE	Monzonite	0.6	1.7	2.8	1.1	9.50	0.03	0.01	0.02	—
W21R-4795	31738	340	350	WASTE	FALSE	Monzonite	<0.6	1.0	#N/A	1.0	9.88	<0.02	0.01	<0.02	—
W21R-4795	31757	500	510	ORE	FALSE	Monzonite	8.4	8.1	1.0	-0.3	9.00	0.29	0.02	0.27	0.016
W21R-4795	31763	540	550	ORE	FALSE	Monzonite	0.6	2.3	3.8	1.7	9.48	0.03	0.01	0.02	0.018
W21R-4795	31767	580	590	WASTE	FALSE	Monzonite	<0.6	3.0	#N/A	3.0	9.31	<0.02	0.01	<0.02	0.008
W21R-4795	31771	620	630	ORE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	9.33	<0.02	<0.01	<0.02	0.015
W21R-4796	32209	200	210	WASTE	FALSE	Monzonite	3.8	7.20	1.9	3.40	8.91	0.14	0.02	0.12	—
W21R-4796	32213	240	250	WASTE	FALSE	Monzonite	0.3	1.50	-999	1.50	8.36	0.03	0.02	0.01	—
W21R-4796	32217	280	290	WASTE	FALSE	Monzonite	3.8	3.00	0.8	-0.800	8.87	0.14	0.02	0.12	—
W21R-4796	32221	320	330	WASTE	FALSE	Monzonite	3.1	2.20	0.7	-0.900	9.12	0.12	0.02	0.10	—
W21R-4796	32230	360	370	WASTE	FALSE	Monzonite	0.9	2.50	2.8	1.60	8.97	0.04	0.01	0.03	0.001
W21R-4796	32242	480	490	ORE	FALSE	Monzonite	5.9	12.2	2.1	6.30	8.92	0.21	0.02	0.19	0.013
W21R-4796	32252	560	570	ORE	FALSE	Monzonite	0.3	0.200	-999	0.200	9.48	0.01	0.01	0.01	0.015
W21R-4796	32258	620	630	WASTE	FALSE	Monzonite	0.3	1.70	-999	1.70	8.58	0.02	0.01	0.01	0.003
W21R-4797	31796	170	180	WASTE	FALSE	Monzonite	<0.6	8.9	#N/A	8.9	9.07	<0.02	0.01	<0.02	0.002
W21R-4797	31800	210	220	WASTE	FALSE	Monzonite	<0.6	8.8	#N/A	8.8	9.53	0.03	0.02	<0.02	—
W21R-4797	31804	250	260	WASTE	FALSE	Monzonite	0.6	0.5	0.8	-0.1	9.25	0.04	0.02	0.02	—
W21R-4797	31808	290	300	WASTE	FALSE	Monzonite	0.6	2.5	4.2	1.9	9.37	0.03	0.01	0.02	—
W21R-4797	31812	330	340	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	9.72	<0.02	0.02	<0.02	—
W21R-4797	31821	370	380	WASTE	FALSE	Monzonite	3.4	1.8	0.5	-1.6	8.78	0.13	0.02	0.11	—
W21R-4797	31833	490	500	WASTE	FALSE	Monzonite	0.9	2.5	2.8	1.6	8.74	0.05	0.02	0.03	0.009
W21R-4797	31839	530	540	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	9.34	<0.02	0.01	<0.02	0.012
W21R-4797	31843	570	580	ORE	FALSE	Monzonite	<0.6	2.0	#N/A	2.0	9.21	0.02	0.01	<0.02	0.02
W21R-4797	31847	610	620	ORE	FALSE	Monzonite	0.6	1.0	1.7	0.4	8.83	0.03	0.01	0.02	0.031
W21R-4798	31928	210	220	WASTE	FALSE	Monzonite	1.6	3.10	1.9	1.50	8.94	0.06	0.01	0.05	—
W21R-4798	31932	250	260	WASTE	FALSE	Monzonite	3.1	2.80	0.9	-0.300	8.78	0.12	0.02	0.10	—
W21R-4798	31936	290	300	WASTE	FALSE	Monzonite	22.8	0.300	0.05	-22.5	7.52	0.76	0.03	0.73	0.002
W21R-4798	31940	330	340	WASTE	FALSE	Monzonite	7.5	2.50	0.3	-5.00	8.60	0.26	0.02	0.24	—
W21R-4798	31949	370	380	WASTE	FALSE	Monzonite	2.2	3.00	1.4	0.800	8.64	0.09	0.02	0.07	0.001
W21R-4798	31953	410	420	WASTE	FALSE	Monzonite	8.1	26.4	3.3	18.3	9.20	0.28	0.02	0.26	0.001
W21R-4798	31961	490	500	WASTE	FALSE	Monzonite	5.0	9.80	2.0	4.80	8.63	0.18	0.02	0.16	0.002
W21R-4798	31967	530	540	WASTE	FALSE	Monzonite	0.6	6.50	10.8	5.90	9.24	0.04	0.02	0.02	—

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 15 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4798	31971	570	580	WASTE	FALSE	Monzonite	0.3	2.80	-999	2.80	9.60	0.03	0.02	0.01	—
W21R-4798	31975	610	620	WASTE	FALSE	Monzonite	0.3	0.800	-999	0.800	9.81	0.01	0.02	0.01	—
W21R-4798	31992	730	740	WASTE	FALSE	Monzonite	3.4	9.60	2.8	6.20	9.50	0.12	0.01	0.11	0.001
W21R-4798	31996	770	780	WASTE	FALSE	Monzonite	0.9	2.50	2.8	1.60	9.54	0.04	0.01	0.03	0.004
W21R-4799	32015	160	170	WASTE	FALSE	Monzonite	2.8	18.8	6.7	16.0	9.26	0.11	0.02	0.09	—
W21R-4799	32021	200	210	WASTE	FALSE	Monzonite	<0.6	5.0	#N/A	5.0	9.30	0.02	0.01	<0.02	—
W21R-4799	32025	240	250	WASTE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	9.27	0.03	0.05	<0.02	—
W21R-4799	32029	280	290	WASTE	FALSE	Monzonite	0.6	4.4	7.3	3.8	9.19	0.04	0.02	0.02	—
W21R-4799	32033	320	330	WASTE	FALSE	Monzonite	1.3	5.0	3.8	3.7	8.86	0.06	0.02	0.04	—
W21R-4799	32042	360	370	WASTE	FALSE	Monzonite	4.1	4.2	1.0	0.1	8.96	0.15	0.02	0.13	—
W21R-4799	32064	560	570	WASTE	FALSE	Monzonite	<0.6	17.2	#N/A	17.2	9.59	0.02	0.02	<0.02	—
W21R-4799	32068	600	610	WASTE	FALSE	Monzonite	<0.6	4.1	#N/A	4.1	9.34	0.03	0.02	<0.02	—
W21R-4799	32078	680	690	ORE	FALSE	Monzonite	0.9	4.0	4.4	3.1	9.19	0.04	0.01	0.03	0.016
W21R-4799	32085	720	730	WASTE	FALSE	Monzonite	<0.6	3.5	#N/A	3.5	9.26	<0.02	0.01	<0.02	0.005
W21R-4799	32089	760	770	WASTE	FALSE	Monzonite	<0.6	4.7	#N/A	4.7	9.26	<0.02	0.01	<0.02	0.003
W21R-4799	32092	790	800	WASTE	FALSE	Monzonite	<0.6	4.4	#N/A	4.4	9.31	<0.02	0.01	<0.02	0.008
W21R-4800	32109	160	170	WASTE	FALSE	Monzonite	1.3	11.4	8.8	10.1	9.36	0.05	0.01	0.04	—
W21R-4800	32115	200	210	WASTE	FALSE	Monzonite	<0.6	4.5	#N/A	4.5	9.35	0.02	0.02	<0.02	—
W21R-4800	32119	240	250	WASTE	FALSE	Monzonite	2.5	2.8	1.1	0.3	9.27	0.10	0.02	0.08	—
W21R-4800	32123	280	290	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	9.72	0.02	0.02	<0.02	—
W21R-4800	32127	320	330	WASTE	FALSE	Monzonite	0.6	3.2	5.3	2.6	9.57	0.03	0.01	0.02	—
W21R-4800	32136	360	370	WASTE	FALSE	Monzonite	6.6	1.8	0.3	-4.8	8.86	0.22	0.01	0.21	—
W21R-4800	32140	400	410	WASTE	FALSE	Monzonite	1.9	66.7	35.1	64.8	8.70	0.07	0.01	0.06	—
W21R-4800	32144	440	450	WASTE	FALSE	Monzonite	0.6	22.6	37.7	22.0	9.09	0.03	0.01	0.02	—
W21R-4800	32158	560	570	WASTE	FALSE	Monzonite	<0.6	14.6	#N/A	14.6	9.41	<0.02	0.02	<0.02	—
W21R-4800	32162	600	610	WASTE	FALSE	Monzonite	8.1	4.9	0.6	-3.2	9.21	0.29	0.03	0.26	—
W21R-4800	32166	640	650	ORE	FALSE	Monzonite	0.6	74.6	124.3	74.0	9.01	0.03	0.01	0.02	0.062
W21R-4800	32179	720	730	ORE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	9.43	<0.02	0.01	<0.02	0.014
W21R-4800	32183	760	770	WASTE	FALSE	Monzonite	<0.6	4.1	#N/A	4.1	9.42	<0.02	0.02	<0.02	—
W21R-4800	32186	790	800	WASTE	FALSE	Monzonite	<0.6	4.8	#N/A	4.8	9.25	<0.02	0.01	<0.02	—
W21R-4801	32280	160	170	WASTE	FALSE	Monzonite	<0.6	14.5	#N/A	14.5	9.59	<0.02	0.02	<0.02	—
W21R-4801	32286	200	210	WASTE	FALSE	Monzonite	5.3	3.7	0.7	-1.6	9.16	0.19	0.02	0.17	—
W21R-4801	32290	240	250	WASTE	FALSE	Monzonite	0.6	1.7	2.8	1.1	9.26	0.05	0.03	0.02	—
W21R-4801	32294	280	290	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	8.79	0.04	0.03	<0.02	—

Table D-5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 16 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4801	32298	320	330	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.12	0.03	0.02	<0.02	—
W21R-4801	32307	360	370	WASTE	FALSE	Monzonite	2.8	1.0	0.4	-1.8	8.65	0.11	0.02	0.09	—
W21R-4801	32311	400	410	WASTE	FALSE	Monzonite	0.6	1.7	2.8	1.1	8.69	0.04	0.02	0.02	—
W21R-4801	32325	520	530	WASTE	FALSE	Monzonite	<0.6	20.5	#N/A	20.5	9.52	<0.02	0.02	<0.02	—
W21R-4801	32329	560	570	WASTE	FALSE	Monzonite	<0.6	3.2	#N/A	3.2	9.43	0.03	0.03	<0.02	—
W21R-4801	32337	640	650	WASTE	TRUE	Monzonite	<0.6	65.3	#N/A	65.3	8.74	<0.02	0.02	<0.02	—
W21R-4801	32343	680	690	WASTE	FALSE	Monzonite	0.6	21.0	35.0	20.4	8.79	0.04	0.02	0.02	—
W21R-4801	32350	720	730	WASTE	FALSE	Monzonite	<0.6	2.0	#N/A	2.0	9.14	0.02	0.02	<0.02	—
W21R-4801	32354	760	770	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	9.53	<0.02	0.02	<0.02	—
W21R-4801	32357	790	800	WASTE	FALSE	Monzonite	<0.6	3.0	#N/A	3.0	9.20	<0.02	0.01	<0.02	—
W21R-4802	32377	170	180	WASTE	FALSE	Monzonite	0.3	21.9	-999	21.9	9.16	0.03	0.02	0.01	—
W21R-4802	32381	210	220	WASTE	FALSE	Monzonite	0.3	2.70	-999	2.70	9.29	0.03	0.02	0.01	—
W21R-4802	32385	250	260	WASTE	FALSE	Monzonite	0.6	3.30	5.5	2.70	9.13	0.05	0.03	0.02	—
W21R-4802	32389	290	300	WASTE	FALSE	Monzonite	1.3	2.30	1.8	1.00	9.23	0.06	0.02	0.04	—
W21R-4802	32393	330	340	WASTE	FALSE	Monzonite	0.3	2.50	-999	2.50	8.89	0.02	0.02	0.01	—
W21R-4802	32402	370	380	WASTE	FALSE	Monzonite	0.3	2.00	-999	2.00	9.04	0.03	0.02	0.01	—
W21R-4802	32406	410	420	WASTE	FALSE	Monzonite	0.3	1.80	-999	1.80	8.96	0.03	0.02	0.01	—
W21R-4802	32420	530	540	WASTE	FALSE	Monzonite	0.3	4.20	-999	4.20	9.26	0.02	0.02	0.01	—
W21R-4802	32424	570	580	WASTE	FALSE	Monzonite	0.3	2.50	-999	2.50	9.40	0.02	0.01	0.01	—
W21R-4802	32432	650	660	ORE	FALSE	Monzonite	0.3	19.2	-999	19.2	8.37	0.03	0.02	0.01	0.02
W21R-4802	32438	690	700	ORE	FALSE	Monzonite	0.3	1.80	-999	1.80	8.26	0.02	0.01	0.01	0.021
W21R-4802	32445	730	740	ORE	FALSE	Monzonite	0.6	9.00	15.0	8.40	8.61	0.03	0.01	0.02	0.059
W21R-4802	32449	770	780	ORE	FALSE	Monzonite	0.3	2.00	-999	2.00	9.18	0.01	0.01	0.01	0.013
W21R-4803	32476	220	230	WASTE	FALSE	Monzonite	<0.6	7.8	#N/A	7.8	9.26	0.02	0.02	<0.02	—
W21R-4803	32480	260	270	WASTE	FALSE	Monzonite	<0.6	3.7	#N/A	3.7	9.38	0.02	0.02	<0.02	—
W21R-4803	32484	300	310	WASTE	FALSE	Monzonite	<0.6	4.0	#N/A	4.0	9.35	<0.02	0.01	<0.02	—
W21R-4803	32505	460	470	WASTE	FALSE	Monzonite	<0.6	5.6	#N/A	5.6	9.00	<0.02	0.01	<0.02	0.002
W21R-4803	32509	500	510	WASTE	FALSE	Monzonite	<0.6	12.7	#N/A	12.7	9.17	0.02	0.02	<0.02	—
W21R-4803	32515	540	550	WASTE	FALSE	Monzonite	<0.6	3.0	#N/A	3.0	9.33	<0.02	0.01	<0.02	0.011
W21R-4803	32519	580	590	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	9.39	<0.02	0.01	<0.02	0.003
W21R-4803	32523	620	630	WASTE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	9.40	<0.02	0.01	<0.02	0.003
W21R-4804	32549	190	200	WASTE	FALSE	Monzonite	0.6	9.2	15.3	8.6	9.08	0.04	0.02	0.02	—
W21R-4804	32553	230	240	WASTE	FALSE	Monzonite	7.2	3.8	0.5	-3.4	8.82	0.25	0.02	0.23	—
W21R-4804	32557	270	280	WASTE	FALSE	Monzonite	1.9	1.0	0.5	-0.9	8.78	0.09	0.03	0.06	—

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 17 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4804	32561	310	320	WASTE	FALSE	Monzonite	4.7	3.5	0.7	-1.2	9.03	0.17	0.02	0.15	—
W21R-4804	32570	350	360	WASTE	FALSE	Monzonite	3.1	1.3	0.4	-1.8	9.05	0.12	0.02	0.10	0.002
W21R-4804	32574	390	400	WASTE	FALSE	Monzonite	<0.6	1.0	#N/A	1.0	9.27	<0.02	0.01	<0.02	0.003
W21R-4804	32592	550	560	WASTE	FALSE	Monzonite	<0.6	6.7	#N/A	6.7	9.52	<0.02	0.02	<0.02	—
W21R-4804	32596	590	600	WASTE	FALSE	Monzonite	0.9	2.8	3.1	1.9	8.56	0.06	0.03	0.03	—
W21R-4804	32604	670	680	ORE	FALSE	Monzonite	<0.6	8.5	#N/A	8.5	9.12	<0.02	0.01	<0.02	0.029
W21R-4804	32613	710	720	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.45	<0.02	0.01	<0.02	0.005
W21R-4804	32617	750	760	WASTE	TRUE	Monzonite	0.6	1.5	2.5	0.9	9.41	0.03	0.01	0.02	0.009
W21R-4804	32621	790	800	ORE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	9.45	<0.02	0.01	<0.02	0.013
W21R-4805	32644	200	210	WASTE	FALSE	Monzonite	<0.6	10.5	#N/A	10.5	9.37	<0.02	0.02	<0.02	—
W21R-4805	32648	240	250	WASTE	FALSE	Monzonite	1.6	4.7	2.9	3.1	8.97	0.07	0.02	0.05	0.003
W21R-4805	32652	280	290	WASTE	FALSE	Monzonite	4.7	2.5	0.5	-2.2	8.37	0.17	0.02	0.15	0.003
W21R-4805	32656	320	330	WASTE	FALSE	Monzonite	3.4	1.2	0.4	-2.2	8.49	0.13	0.02	0.11	—
W21R-4805	32665	360	370	WASTE	FALSE	Monzonite	1.9	1.3	0.7	-0.6	8.73	0.08	0.02	0.06	—
W21R-4805	32669	400	410	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	9.41	<0.02	0.02	<0.02	—
W21R-4805	32673	440	450	WASTE	FALSE	Monzonite	<0.6	30.0	#N/A	30.0	8.43	<0.02	0.01	<0.02	—
W21R-4805	32683	520	530	WASTE	FALSE	Monzonite	1.3	9.5	7.3	8.2	9.24	0.06	0.02	0.04	0.003
W21R-4805	32687	560	570	WASTE	FALSE	Monzonite	0.6	2.7	4.5	2.1	9.47	0.04	0.02	0.02	0.004
W21R-4805	32691	600	610	WASTE	FALSE	Monzonite	1.3	1.8	1.4	0.5	9.38	0.07	0.03	0.04	0.006
W21R-4805	32695	640	650	ORE	FALSE	Monzonite	<0.6	45.2	#N/A	45.2	8.77	<0.02	0.01	<0.02	0.015
W21R-4805	32708	720	730	WASTE	TRUE	Monzonite	<0.6	2.2	#N/A	2.2	9.60	<0.02	0.01	<0.02	0.011
W21R-4805	32712	760	770	ORE	TRUE	Monzonite	<0.6	2.7	#N/A	2.7	9.50	<0.02	0.01	<0.02	0.051
W21R-4806	32720	40	50	ORE	FALSE	Monzonite	0.3	1.30	-999	1.30	8.45	0.10	0.12	0.01	0.013
W21R-4806	32742	240	250	WASTE	FALSE	Monzonite	5.9	1.00	0.2	-4.90	8.90	0.22	0.03	0.19	0.005
W21R-4806	32746	280	290	WASTE	FALSE	Monzonite	6.9	4.40	0.6	-2.50	8.73	0.25	0.03	0.22	0.003
W21R-4806	32750	320	330	WASTE	FALSE	Monzonite	4.1	2.70	0.7	-1.40	8.94	0.15	0.02	0.13	—
W21R-4806	32759	360	370	WASTE	FALSE	Monzonite	0.3	2.00	-999	2.00	9.51	0.03	0.02	0.01	—
W21R-4806	32763	400	410	WASTE	FALSE	Monzonite	0.3	2.00	-999	2.00	9.93	0.01	0.01	0.01	—
W21R-4806	32767	440	450	WASTE	FALSE	Monzonite	0.3	3.70	-999	3.70	8.57	0.02	0.02	0.01	0.002
W21R-4806	32781	560	570	WASTE	FALSE	Monzonite	1.9	13.4	7.1	11.5	9.12	0.09	0.03	0.06	—
W21R-4806	32785	600	610	ORE	FALSE	Monzonite	6.3	4.80	0.8	-1.50	8.88	0.23	0.03	0.20	0.014
W21R-4806	32789	640	650	WASTE	FALSE	Monzonite	0.3	191	-999	191	8.84	0.02	0.01	0.01	0.008
W21R-4806	32802	720	730	WASTE	FALSE	Monzonite	0.3	5.30	-999	5.30	9.21	0.01	0.01	0.01	0.009
W21R-4806	32806	760	770	ORE	FALSE	Monzonite	0.3	2.50	-999	2.50	9.52	0.01	0.01	0.01	0.013

Table D-5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 18 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4807	32832	170	180	WASTE	FALSE	Monzonite	<0.6	84.2	#N/A	84.2	8.60	<0.02	0.01	<0.02	—
W21R-4807	32836	210	220	WASTE	FALSE	Monzonite	<0.6	28.9	#N/A	28.9	8.99	0.04	0.03	<0.02	0.002
W21R-4807	32840	250	260	WASTE	FALSE	Monzonite	<0.6	0.3	#N/A	0.3	9.31	<0.02	0.02	<0.02	—
W21R-4807	32844	290	300	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	9.30	0.04	0.03	<0.02	—
W21R-4807	32848	330	340	WASTE	FALSE	Monzonite	0.9	0.5	0.6	-0.4	8.91	0.09	0.06	0.03	0.002
W21R-4807	32857	370	380	WASTE	FALSE	Monzonite	<0.6	1.0	#N/A	1.0	8.96	0.06	0.05	<0.02	0.002
W21R-4807	32861	410	420	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	9.17	0.03	0.02	<0.02	—
W21R-4807	32879	570	580	WASTE	FALSE	Monzonite	<0.6	4.8	#N/A	4.8	9.66	<0.02	0.01	<0.02	—
W21R-4807	32883	610	620	WASTE	FALSE	Monzonite	0.6	54.3	90.5	53.7	9.68	0.04	0.02	0.02	0.002
W21R-4807	32887	650	660	WASTE	FALSE	Monzonite	4.1	104.0	25.4	99.9	9.05	0.14	0.01	0.13	0.004
W21R-4807	32893	690	700	ORE	FALSE	Monzonite	0.6	2.8	4.7	2.2	9.60	0.03	0.01	0.02	0.023
W21R-4807	32900	730	740	WASTE	TRUE	Monzonite	<0.6	2.7	#N/A	2.7	9.81	<0.02	0.01	<0.02	0.007
W21R-4807	32904	770	780	WASTE	TRUE	Monzonite	<0.6	3.2	#N/A	3.2	9.69	<0.02	0.01	<0.02	0.002
W21R-4808	32927	180	190	WASTE	FALSE	Monzonite	<0.6	52.8	#N/A	52.8	8.62	<0.02	0.01	<0.02	—
W21R-4808	32931	220	230	WASTE	FALSE	Monzonite	1.3	3.6	2.8	2.3	8.51	0.10	0.06	0.04	0.001
W21R-4808	32935	260	270	WASTE	FALSE	Monzonite	3.4	2.3	0.7	-1.1	8.61	0.13	0.02	0.11	0.002
W21R-4808	32939	300	310	WASTE	FALSE	Monzonite	5.6	1.8	0.3	-3.8	8.53	0.21	0.03	0.18	0.001
W21R-4808	32952	380	390	WASTE	FALSE	Monzonite	10.3	2.6	0.3	-7.7	8.51	0.35	0.02	0.33	0.005
W21R-4808	32956	420	430	WASTE	FALSE	Monzonite	0.6	2.7	4.5	2.1	8.99	0.04	0.02	0.02	—
W21R-4808	32970	540	550	WASTE	FALSE	Monzonite	<0.6	1.0	#N/A	1.0	9.46	0.03	0.02	<0.02	—
W21R-4808	32974	580	590	WASTE	FALSE	Monzonite	<0.6	1.0	#N/A	1.0	9.77	0.02	0.02	<0.02	—
W21R-4808	32978	620	630	WASTE	FALSE	Monzonite	<0.6	24.1	#N/A	24.1	8.96	<0.02	0.01	<0.02	0.006
W21R-4808	32991	700	710	ORE	FALSE	Monzonite	<0.6	10.1	#N/A	10.1	9.06	0.02	0.02	<0.02	0.04
W21R-4808	32995	740	750	ORE	FALSE	Monzonite	<0.6	2.0	#N/A	2.0	9.62	<0.02	0.01	<0.02	0.015
W21R-4808	32999	780	790	ORE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	9.24	<0.02	0.01	<0.02	0.013
W21R-4809	33017	160	170	WASTE	FALSE	Monzonite	<0.6	5.2	#N/A	5.2	9.51	0.02	0.01	<0.02	—
W21R-4809	33023	200	210	WASTE	FALSE	Monzonite	<0.6	2.7	#N/A	2.7	9.62	<0.02	0.02	<0.02	—
W21R-4809	33027	240	250	WASTE	FALSE	Monzonite	<0.6	2.0	#N/A	2.0	9.73	<0.02	0.02	<0.02	—
W21R-4809	33031	280	290	WASTE	FALSE	Monzonite	1.6	3.3	2.1	1.7	9.45	0.07	0.02	0.05	—
W21R-4809	33035	320	330	WASTE	FALSE	Monzonite	0.6	1.2	2.0	0.6	9.03	0.04	0.02	0.02	0.001
W21R-4809	33044	360	370	WASTE	FALSE	Monzonite	6.6	3.8	0.6	-2.8	8.72	0.24	0.03	0.21	-999
W21R-4809	33048	400	410	WASTE	FALSE	Monzonite	11.9	2.6	0.2	-9.3	8.53	0.41	0.03	0.38	0.002
W21R-4809	33052	440	450	WASTE	FALSE	Monzonite	1.9	2.7	1.4	0.8	8.90	0.09	0.03	0.06	—
W21R-4809	33066	560	570	WASTE	FALSE	Monzonite	<0.6	18.3	#N/A	18.3	9.39	0.03	0.02	<0.02	—

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 19 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4809	33070	600	610	WASTE	FALSE	Monzonite	5.3	6.4	1.2	1.1	9.54	0.20	0.03	0.17	—
W21R-4809	33080	680	690	ORE	FALSE	Monzonite	<0.6	17.4	#N/A	17.4	8.57	<0.02	0.01	<0.02	0.023
W21R-4809	33087	720	730	ORE	FALSE	Monzonite	0.6	6.9	11.5	6.3	8.84	0.03	0.01	0.02	0.041
W21R-4809	33091	760	770	WASTE	FALSE	Monzonite	<0.6	3.8	#N/A	3.8	9.13	<0.02	0.01	<0.02	0.011
W21R-4809	33094	790	800	WASTE	FALSE	Monzonite	<0.6	2.0	#N/A	2.0	9.24	<0.02	0.01	<0.02	0.005
W21R-4810	33111	160	170	WASTE	FALSE	Monzonite	<0.6	6.8	#N/A	6.8	9.18	0.04	0.03	<0.02	—
W21R-4810	33117	200	210	WASTE	FALSE	Monzonite	0.6	3.0	5.0	2.4	9.20	0.05	0.03	0.02	—
W21R-4810	33121	240	250	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	9.19	0.02	0.02	<0.02	—
W21R-4810	33125	280	290	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	9.16	0.03	0.02	<0.02	—
W21R-4810	33129	320	330	WASTE	FALSE	Monzonite	3.4	1.5	0.4	-1.9	8.90	0.14	0.03	0.11	—
W21R-4810	33138	360	370	WASTE	FALSE	Monzonite	2.5	1.0	0.4	-1.5	8.90	0.10	0.02	0.08	—
W21R-4810	33142	400	410	WASTE	FALSE	Monzonite	6.3	79.1	12.6	72.8	8.72	0.21	0.01	0.20	—
W21R-4810	33156	520	530	WASTE	FALSE	Monzonite	<0.6	6.3	#N/A	6.3	9.06	0.04	0.03	<0.02	—
W21R-4810	33160	560	570	WASTE	FALSE	Monzonite	<0.6	4.4	#N/A	4.4	9.73	0.02	0.02	<0.02	—
W21R-4810	33164	600	610	WASTE	FALSE	Monzonite	5.6	1.5	0.3	-4.1	8.88	0.20	0.02	0.18	—
W21R-4810	33181	720	730	WASTE	TRUE	Monzonite	1.6	21.4	13.4	19.8	8.92	0.08	0.03	0.05	0.003
W21R-4810	33185	760	770	WASTE	TRUE	Monzonite	<0.6	7.4	#N/A	7.4	9.14	<0.02	0.01	<0.02	0.007
W21R-4811	33308	230	240	WASTE	FALSE	Monzonite	2.8	4.2	1.5	1.4	8.76	0.13	0.04	0.09	0.006
W21R-4811	33312	270	280	WASTE	FALSE	Monzonite	14.1	1.3	<0.1	-12.8	8.00	0.49	0.04	0.45	0.004
W21R-4811	33316	310	320	WASTE	FALSE	Monzonite	0.6	1.8	3.0	1.2	8.98	0.04	0.02	0.02	—
W21R-4811	33325	350	360	WASTE	FALSE	Monzonite	2.8	2.3	0.8	-0.5	9.02	0.11	0.02	0.09	—
W21R-4811	33329	390	400	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	9.10	0.03	0.02	<0.02	—
W21R-4811	33333	430	440	WASTE	FALSE	Monzonite	5.6	2.0	0.4	-3.6	8.60	0.21	0.03	0.18	—
W21R-4811	33347	550	560	WASTE	FALSE	Monzonite	0.6	2.5	4.2	1.9	9.28	0.05	0.03	0.02	—
W21R-4811	33351	590	600	WASTE	FALSE	Monzonite	6.6	9.3	1.4	2.7	8.49	0.24	0.03	0.21	0.006
W21R-4811	33368	710	720	ORE	FALSE	Monzonite	<0.6	4.2	#N/A	4.2	8.59	0.03	0.02	<0.02	0.023
W21R-4811	33372	750	760	ORE	TRUE	Monzonite	<0.6	1.7	#N/A	1.7	8.62	<0.02	0.01	<0.02	0.033
W21R-4811	33376	790	800	ORE	TRUE	Monzonite	<0.6	1.5	#N/A	1.5	9.02	<0.02	0.01	<0.02	0.029
W21R-4812	33195	60	70	WASTE	FALSE	Monzonite	0.6	121.0	202.2	121.0	8.58	0.03	0.01	0.02	—
W21R-4812	33217	260	270	WASTE	FALSE	Monzonite	<0.6	2.0	#N/A	2.0	9.39	0.03	0.02	<0.02	0.002
W21R-4812	33221	300	310	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	9.14	0.02	0.02	<0.02	—
W21R-4812	33227	340	350	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	9.31	0.02	0.02	<0.02	—
W21R-4812	33234	380	390	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	9.77	<0.02	0.01	<0.02	—
W21R-4812	33238	420	430	WASTE	FALSE	Monzonite	<0.6	3.3	#N/A	3.3	9.80	<0.02	0.01	<0.02	—

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 20 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4812	33242	460	470	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	9.28	<0.02	0.01	<0.02	—
W21R-4812	33256	580	590	WASTE	FALSE	Monzonite	6.9	2.6	0.4	-4.3	9.05	0.24	0.02	0.22	0.008
W21R-4812	33260	620	630	WASTE	FALSE	Monzonite	8.4	6.6	0.8	-1.8	9.44	0.30	0.03	0.27	0.009
W21R-4812	33264	660	670	WASTE	FALSE	Monzonite	0.6	93.4	155.7	92.8	8.89	0.04	0.02	0.02	0.012
W21R-4812	33277	740	750	ORE	TRUE	Monzonite	<0.6	4.6	#N/A	4.6	9.09	0.02	0.02	<0.02	0.044
W21R-4812	33281	780	790	WASTE	FALSE	Monzonite	<0.6	4.1	#N/A	4.1	9.47	<0.02	0.01	<0.02	0.006
W21R-4813	33403	240	250	WASTE	FALSE	Monzonite	6.9	2.5	0.4	-4.4	8.37	0.24	0.02	0.22	—
W21R-4813	33407	280	290	WASTE	FALSE	Monzonite	10.3	1.5	0.1	-8.8	8.03	0.36	0.03	0.33	—
W21R-4813	33411	320	330	WASTE	FALSE	Monzonite	2.5	2.3	0.9	-0.2	8.11	0.10	0.02	0.08	—
W21R-4813	33420	360	370	WASTE	FALSE	Monzonite	<0.6	1.0	#N/A	1.0	8.13	0.03	0.02	<0.02	0.003
W21R-4813	33424	400	410	WASTE	FALSE	Monzonite	2.2	2.0	0.9	-0.2	8.53	0.09	0.02	0.07	—
W21R-4813	33428	440	450	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	9.05	<0.02	0.02	<0.02	—
W21R-4813	33442	560	570	WASTE	FALSE	Monzonite	6.3	3.0	0.5	-3.3	9.02	0.23	0.03	0.20	—
W21R-4813	33450	640	650	WASTE	FALSE	Monzonite	<0.6	23.8	#N/A	23.8	8.71	<0.02	0.01	<0.02	0.007
W21R-4813	33463	720	730	WASTE	TRUE	Monzonite	<0.6	2.5	#N/A	2.5	8.28	<0.02	0.02	<0.02	0.007
W21R-4813	33467	760	770	ORE	TRUE	Monzonite	0.6	2.5	4.2	1.9	9.01	0.03	0.01	0.02	0.044
W21R-4814	33491	200	210	WASTE	FALSE	Monzonite	1.6	8.7	5.4	7.1	8.32	0.12	0.07	0.05	0.002
W21R-4814	33495	240	250	WASTE	FALSE	Monzonite	0.6	4.5	7.5	3.9	8.37	0.08	0.06	0.02	0.001
W21R-4814	33499	280	290	WASTE	FALSE	Monzonite	<0.6	7.5	#N/A	7.5	8.58	0.03	0.02	<0.02	—
W21R-4814	33503	320	330	WASTE	FALSE	Monzonite	6.9	1.8	0.3	-5.1	8.22	0.24	0.02	0.22	—
W21R-4814	33512	360	370	WASTE	FALSE	Monzonite	22.5	1.7	<0.1	-20.8	8.12	0.74	0.02	0.72	0.002
W21R-4814	33516	400	410	WASTE	FALSE	Monzonite	1.9	2.0	1.1	0.1	8.70	0.08	0.02	0.06	—
W21R-4814	33530	520	530	WASTE	FALSE	Monzonite	<0.6	42.8	#N/A	42.8	9.29	0.03	0.02	<0.02	—
W21R-4815	33582	410	420	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	8.62	0.02	0.01	<0.02	0.006
W21R-4815	33586	450	460	ORE	FALSE	Monzonite	<0.6	2.0	#N/A	2.0	8.79	0.03	0.02	<0.02	0.017
W21R-4815	33590	490	500	ORE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	8.62	0.02	0.01	<0.02	0.016
W21R-4815	33596	530	540	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	8.64	0.03	0.02	<0.02	0.011
W21R-4815	33600	570	580	WASTE	FALSE	Monzonite	2.5	11.7	4.7	9.2	8.90	0.11	0.03	0.08	0.001
W21R-4815	33604	610	620	WASTE	FALSE	Monzonite	10.3	10.5	1.0	0.2	8.79	0.37	0.04	0.33	0.011
W21R-4815	33608	650	660	WASTE	FALSE	Monzonite	<0.6	1.0	#N/A	1.0	8.92	0.02	0.01	<0.02	0.005
W21R-4815	33614	690	700	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	9.42	<0.02	0.01	<0.02	0.007
W21R-4816	33670	350	360	WASTE	FALSE	Monzonite	<0.6	103.0	#N/A	103.0	8.58	<0.02	<0.01	<0.02	—
W21R-4816	33674	390	400	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.85	0.02	0.02	<0.02	0.006
W21R-4816	33678	430	440	ORE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	8.77	<0.02	0.01	<0.02	0.02

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 21 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4816	33682	470	480	ORE	FALSE	Monzonite	<0.6	1.0	#N/A	1.0	9.10	<0.02	0.01	<0.02	0.018
W21R-4816	33688	510	520	WASTE	FALSE	Monzonite	<0.6	1.2	#N/A	1.2	9.26	<0.02	0.01	<0.02	0.007
W21R-4816	33692	550	560	WASTE	FALSE	Monzonite	3.1	1.5	0.5	-1.6	8.89	0.12	0.02	0.10	0.005
W21R-4816	33696	590	600	WASTE	FALSE	Monzonite	<0.6	4.0	#N/A	4.0	9.20	0.03	0.02	<0.02	0.003
W21R-4816	33700	630	640	WASTE	FALSE	Monzonite	<0.6	2.2	#N/A	2.2	8.89	<0.02	0.01	<0.02	0.008
W21R-4816	33704	670	680	WASTE	FALSE	Monzonite	<0.6	2.7	#N/A	2.7	9.32	<0.02	0.01	<0.02	0.002
W21R-4816	33721	790	800	WASTE	TRUE	Monzonite	9.1	3.2	0.4	-5.9	8.62	0.33	0.04	0.29	—
W21R-4817	33847	290	300	WASTE	FALSE	Monzonite	<0.6	2.7	#N/A	2.7	8.74	0.02	0.01	<0.02	—
W21R-4817	33851	330	340	WASTE	FALSE	Monzonite	<0.6	3.3	#N/A	3.3	8.73	0.03	0.02	<0.02	—
W21R-4817	33860	370	380	WASTE	FALSE	Monzonite	<0.6	3.0	#N/A	3.0	8.47	0.02	0.01	<0.02	—
W21R-4818	33752	280	290	WASTE	FALSE	Monzonite	2.2	9.0	4.1	6.8	8.71	0.09	0.02	0.07	—
W21R-4818	33756	320	330	WASTE	FALSE	Monzonite	2.5	7.3	2.9	4.8	8.91	0.10	0.02	0.08	—
W21R-4818	33765	360	370	WASTE	TRUE	Monzonite	0.6	2.7	4.5	2.1	8.87	0.03	0.01	0.02	—
W21R-4818	33769	400	410	WASTE	TRUE	Monzonite	<0.6	0.8	#N/A	0.8	8.99	0.03	0.03	<0.02	—
W21R-4818	33773	440	450	WASTE	TRUE	Monzonite	<0.6	1.0	#N/A	1.0	9.10	<0.02	0.02	<0.02	—
W21R-4818	33777	480	490	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	9.48	<0.02	0.01	<0.02	—
W21R-4818	33783	520	530	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	9.52	<0.02	0.01	<0.02	—
W21R-4818	33787	560	570	WASTE	FALSE	Monzonite	<0.6	35.9	#N/A	35.9	9.20	<0.02	0.01	<0.02	—
W21R-4818	33801	680	690	WASTE	FALSE	Monzonite	7.5	15.8	2.1	8.3	9.00	0.26	0.02	0.24	0.005
W21R-4818	33808	720	730	WASTE	FALSE	Monzonite	1.9	84.2	44.3	82.3	8.54	0.08	0.02	0.06	0.009
W21R-4819	34869	120	130	ORE	FALSE	Monzonite	2.5	3.2	1.3	0.7	7.66	0.53	0.45	0.08	0.0172
W21R-4820	33885	120	130	WASTE	FALSE	Monzonite	<0.6	150.0	#N/A	150.0	8.64	0.03	0.02	<0.02	—
W21R-4820	33895	200	210	WASTE	FALSE	Monzonite	1.6	104.0	65.2	103.0	8.75	0.06	0.01	0.05	—
W21R-4820	33908	330	340	WASTE	FALSE	Monzonite	3.1	5.7	1.8	2.6	8.82	0.12	0.02	0.10	—
W21R-4820	33917	370	380	WASTE	FALSE	Monzonite	<0.6	5.2	#N/A	5.2	8.11	0.03	0.02	<0.02	—
W21R-4820	33921	410	420	WASTE	FALSE	Monzonite	0.6	4.7	7.8	4.1	8.12	0.04	0.02	0.02	—
W21R-4820	33925	450	460	WASTE	FALSE	Monzonite	<0.6	5.6	#N/A	5.6	8.42	0.03	0.02	<0.02	—
W21R-4820	33929	490	500	WASTE	FALSE	Monzonite	<0.6	5.2	#N/A	5.2	9.07	0.02	0.02	<0.02	—
W21R-4820	33935	530	540	WASTE	TRUE	Monzonite	<0.6	2.3	#N/A	2.3	8.42	0.03	0.02	<0.02	—
W21R-4820	33939	570	580	WASTE	TRUE	Monzonite	<0.6	5.9	#N/A	5.9	8.81	<0.02	0.01	<0.02	—
W21R-4821	33953	80	90	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	8.87	0.15	0.14	<0.02	0.01
W21R-4821	33967	200	210	WASTE	FALSE	Monzonite	0.9	98.8	109.8	97.9	8.51	0.04	0.01	0.03	—
W21R-4821	33975	280	290	WASTE	FALSE	Monzonite	<0.6	3.5	#N/A	3.5	8.92	<0.02	0.01	<0.02	—
W21R-4821	33979	320	330	WASTE	FALSE	Monzonite	<0.6	4.2	#N/A	4.2	9.30	<0.02	0.01	<0.02	—

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 22 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4821	33988	360	370	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	9.33	0.03	0.03	<0.02	—
W21R-4821	33992	400	410	WASTE	FALSE	Monzonite	<0.6	1.0	#N/A	1.0	9.31	<0.02	0.02	<0.02	—
W21R-4821	33996	440	450	WASTE	FALSE	Monzonite	<0.6	2.0	#N/A	2.0	9.29	0.03	0.02	<0.02	—
W21R-4821	34000	480	490	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	9.40	<0.02	0.01	<0.02	—
W21R-4821	34006	520	530	WASTE	FALSE	Monzonite	<0.6	2.0	#N/A	2.0	9.56	<0.02	0.01	<0.02	—
W21R-4821	34018	640	650	WASTE	FALSE	Monzonite	7.5	24.0	3.2	16.5	8.49	0.26	0.02	0.24	—
W21R-4821	34024	680	690	WASTE	FALSE	Monzonite	2.5	7.0	2.8	4.5	8.30	0.10	0.02	0.08	0.005
W21R-4821	34035	760	770	ORE	FALSE	Monzonite	<0.6	11.6	#N/A	11.6	8.89	<0.02	0.01	<0.02	0.035
W21R-4822	34061	200	210	WASTE	FALSE	Monzonite	3.4	5.8	1.7	2.4	8.63	0.13	0.02	0.11	0.0004
W21R-4822	34065	240	250	WASTE	FALSE	Monzonite	11.6	7.0	0.6	-4.6	8.70	0.39	0.02	0.37	0.0006
W21R-4822	34069	280	290	WASTE	FALSE	Monzonite	13.8	5.3	0.4	-8.5	8.53	0.46	0.02	0.44	0.0009
W21R-4822	34073	320	330	WASTE	FALSE	Monzonite	7.2	1.7	0.2	-5.5	8.51	0.25	0.02	0.23	0.0002
W21R-4822	34082	360	370	WASTE	FALSE	Monzonite	2.8	1.0	0.4	-1.8	8.56	0.10	0.01	0.09	0.0004
W21R-4822	34086	400	410	WASTE	FALSE	Monzonite	5.0	21.2	4.2	16.2	8.40	0.18	0.02	0.16	0.0004
W21R-4822	34090	440	450	WASTE	FALSE	Monzonite	1.9	29.4	15.5	27.5	8.43	0.07	0.01	0.06	0.0007
W21R-4822	34104	560	570	WASTE	FALSE	Monzonite	<0.6	2.3	#N/A	2.3	8.88	<0.02	0.01	<0.02	0.0002
W21R-4822	34108	600	610	WASTE	FALSE	Monzonite	0.6	1.7	2.8	1.1	8.91	0.03	0.01	0.02	0.00005
W21R-4822	34125	720	730	WASTE	FALSE	Monzonite	0.6	2.2	3.7	1.6	8.71	0.03	0.01	0.02	0.0033
W21R-4822	34129	760	770	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	8.77	<0.02	0.01	<0.02	0.0036
W21R-4823	34141	80	90	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	8.96	0.03	0.03	<0.02	—
W21R-4823	34163	280	290	WASTE	FALSE	Monzonite	3.1	22.0	7.1	18.9	8.92	0.12	0.02	0.10	—
W21R-4823	34167	320	330	WASTE	FALSE	Monzonite	<0.6	6.8	#N/A	6.8	9.34	0.02	0.02	<0.02	—
W21R-4823	34176	360	370	WASTE	FALSE	Monzonite	<0.6	4.4	#N/A	4.4	9.48	0.03	0.02	<0.02	—
W21R-4823	34180	400	410	WASTE	FALSE	Monzonite	<0.6	4.5	#N/A	4.5	9.11	0.03	0.02	<0.02	—
W21R-4823	34184	440	450	WASTE	FALSE	Monzonite	0.6	4.8	8.0	4.2	8.76	0.04	0.02	0.02	—
W21R-4823	34188	480	490	WASTE	FALSE	Monzonite	<0.6	4.7	#N/A	4.7	9.14	0.02	0.02	<0.02	—
W21R-4823	34194	520	530	WASTE	FALSE	Monzonite	<0.6	2.5	#N/A	2.5	8.88	<0.02	0.02	<0.02	—
W21R-4823	34202	600	610	WASTE	FALSE	Monzonite	3.1	9.7	3.1	6.6	8.29	0.12	0.02	0.10	—
W21R-4823	34206	640	650	WASTE	FALSE	Monzonite	2.2	2.0	0.9	-0.2	8.24	0.10	0.03	0.07	0.001
W21R-4823	34212	680	690	WASTE	FALSE	Monzonite	<0.6	58.8	#N/A	58.8	8.77	<0.02	0.01	<0.02	—
W21R-4823	34223	760	770	ORE	TRUE	Monzonite	<0.6	2.0	#N/A	2.0	8.54	<0.02	0.01	<0.02	0.03

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 23 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4824	34274	400	410	WASTE	FALSE	Monzonite	<0.6	46.5	#N/A	46.5	8.73	<0.02	0.01	<0.02	0.0002
W21R-4824	34300	640	650	WASTE	FALSE	Monzonite	7.8	26.0	3.3	18.2	8.90	0.28	0.03	0.25	0.0006
W21R-4824	34306	680	690	ORE	FALSE	Monzonite	3.8	10.8	2.8	7.0	8.44	0.28	0.16	0.12	0.0214
W21R-4824	34317	760	770	WASTE	FALSE	Monzonite	<0.6	2.0	#N/A	2.0	9.13	0.03	0.02	<0.02	0.0111
W21R-4825	34335	140	150	ORE	FALSE	Monzonite	<0.6	8.7	#N/A	8.7	8.15	0.02	0.01	<0.02	0.028
W21R-4825	34354	310	320	WASTE	FALSE	Monzonite	1.3	67.3	51.8	66.0	8.84	0.04	<0.01	0.04	0.0001
W21R-4825	34367	390	400	WASTE	FALSE	Monzonite	0.6	11.9	19.8	11.3	9.31	0.03	0.01	0.02	0.0001
W21R-4825	34371	430	440	WASTE	FALSE	Monzonite	<0.6	3.8	#N/A	3.8	9.46	0.02	0.01	<0.02	0.00005
W21R-4825	34375	470	480	WASTE	FALSE	Monzonite	0.9	1.0	1.1	0.1	8.81	0.05	0.02	0.03	0.0001
W21R-4825	34381	510	520	WASTE	FALSE	Monzonite	0.6	0.7	1.2	0.1	8.87	0.04	0.02	0.02	0.0002
W21R-4825	34397	670	680	WASTE	FALSE	Monzonite	8.8	8.0	0.9	-0.8	8.64	0.31	0.03	0.28	0.0016
W21R-4825	34406	710	720	ORE	FALSE	Monzonite	0.6	15.8	26.3	15.2	8.08	0.05	0.03	0.02	0.0957
W21R-4825	34411	760	770	WASTE	FALSE	Monzonite	<0.6	9.9	#N/A	9.9	8.88	0.03	0.02	<0.02	0.0094
W21R-4826	34428	130	140	WASTE	FALSE	Monzonite	<0.6	5.5	#N/A	5.5	7.96	<0.02	0.01	<0.02	0.0019
W21R-4826	34459	370	380	WASTE	FALSE	Monzonite	<0.6	56.3	#N/A	56.3	8.62	<0.02	0.01	<0.02	0.0016
W21R-4826	34467	450	460	ORE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	8.62	<0.02	<0.01	<0.02	0.0275
W21R-4826	34471	490	500	WASTE	FALSE	Monzonite	<0.6	4.2	#N/A	4.2	8.42	<0.02	0.01	<0.02	0.0022
W21R-4826	34489	650	660	WASTE	FALSE	Monzonite	1.6	2.0	1.3	0.4	8.70	0.08	0.03	0.05	0.004
W21R-4826	34495	690	700	WASTE	FALSE	Monzonite	2.2	0.3	0.1	-1.9	8.37	0.09	0.02	0.07	0.0041
W21R-4826	34506	770	780	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.84	0.03	0.02	<0.02	0.0049
W21R-4827	34517	80	90	WASTE	FALSE	Monzonite	<0.6	23.1	#N/A	23.1	8.34	<0.02	0.01	<0.02	0.0004
W21R-4827	34535	240	250	WASTE	FALSE	Monzonite	<0.6	105.0	#N/A	105.0	8.65	<0.02	0.01	<0.02	0.0055
W21R-4827	34543	320	330	WASTE	FALSE	Monzonite	<0.6	12.4	#N/A	12.4	9.28	<0.02	0.02	<0.02	0.0002
W21R-4827	34552	360	370	WASTE	FALSE	Monzonite	<0.6	5.5	#N/A	5.5	9.43	<0.02	0.02	<0.02	0.0008
W21R-4827	34556	400	410	WASTE	FALSE	Monzonite	<0.6	2.0	#N/A	2.0	9.36	<0.02	0.02	<0.02	0.0004
W21R-4827	34560	440	450	WASTE	FALSE	Monzonite	<0.6	1.7	#N/A	1.7	9.05	<0.02	0.02	<0.02	0.0004
W21R-4827	34564	480	490	WASTE	FALSE	Monzonite	<0.6	2.0	#N/A	2.0	9.23	<0.02	0.02	<0.02	0.0002
W21R-4827	34570	520	530	WASTE	FALSE	Monzonite	<0.6	2.8	#N/A	2.8	8.30	<0.02	<0.01	<0.02	0.0004
W21R-4827	34574	560	570	WASTE	FALSE	Monzonite	<0.6	4.7	#N/A	4.7	9.03	<0.02	0.01	<0.02	0.0007
W21R-4827	34582	640	650	WASTE	FALSE	Monzonite	8.1	5.0	0.6	-3.1	8.40	0.29	0.03	0.26	0.0008
W21R-4827	34588	680	690	WASTE	FALSE	Monzonite	5.0	136.0	27.2	131.0	8.86	0.19	0.03	0.16	0.0022
W21R-4827	34595	720	730	WASTE	FALSE	Monzonite	<0.6	378.0	#N/A	378.0	9.00	<0.02	0.01	<0.02	0.0064
W21R-4856	36103	290	300	WASTE	FALSE	Monzonite	<0.6	28.5	#N/A	28.5	8.71	0.02	0.01	<0.02	0.0002

Table D-5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 24 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4856	36107	330	340	WASTE	FALSE	Monzonite	2.2	1.0	0.5	-1.2	8.73	0.09	0.02	0.07	0.0002
W21R-4856	36116	370	380	WASTE	FALSE	Monzonite	<0.6	1.0	#N/A	1.0	8.77	0.03	0.02	<0.02	0.00005
W21R-4857	36132	100	110	WASTE	FALSE	Monzonite	1.3	4.7	3.6	3.4	8.43	0.09	0.05	0.04	0.0002
W21R-4857	36160	340	350	WASTE	FALSE	Monzonite	0.6	23.5	39.2	22.9	8.51	0.03	0.01	0.02	0.00005
W21R-4857	36167	380	390	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	8.44	<0.02	0.01	<0.02	0.00005
W21R-4857	36171	420	430	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	8.39	<0.02	<0.01	<0.02	0.0001
W21R-4857	36175	460	470	WASTE	FALSE	Monzonite	<0.6	0.2	#N/A	0.2	8.42	0.03	0.02	<0.02	0.00005
W21R-4857	36179	500	510	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	8.40	0.02	0.02	<0.02	0.0001
W21R-4857	36185	540	550	WASTE	FALSE	Monzonite	<0.6	1.3	#N/A	1.3	8.51	0.02	0.02	<0.02	0.00005
W21R-4857	36189	580	590	WASTE	FALSE	Monzonite	1.3	6.1	4.7	4.8	8.52	0.06	0.02	0.04	0.00005
W21R-4857	36197	660	670	WASTE	FALSE	Monzonite	5.0	5.4	1.1	0.4	8.69	0.19	0.03	0.16	0.0009
W21R-4857	36210	740	750	WASTE	FALSE	Monzonite	2.2	80.6	36.6	78.4	8.55	0.09	0.02	0.07	0.0003
W21R-4858	36244	260	270	WASTE	FALSE	Monzonite	<0.6	0.3	#N/A	0.3	8.18	<0.02	0.01	<0.02	—
W21R-4858	36245	270	280	WASTE	FALSE	Monzonite	<0.6	0.7	#N/A	0.7	8.13	0.04	0.03	<0.02	—
W21R-4858	36246	280	290	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	8.18	0.12	0.12	<0.02	—
W21R-4858	36247	290	300	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	8.19	0.05	0.04	<0.02	—
W21R-4858	36248	300	310	WASTE	FALSE	Monzonite	<0.6	0.7	#N/A	0.7	8.21	0.05	0.04	<0.02	—
W21R-4858	36249	310	320	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	8.24	0.04	0.04	<0.02	—
W21R-4858	36250	320	330	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	7.97	0.03	0.03	<0.02	—
W21R-4858	36251	330	340	WASTE	TRUE	Monzonite	<0.6	0.7	#N/A	0.7	7.99	0.04	0.03	<0.02	—
W21R-4858	36254	340	350	WASTE	TRUE	Monzonite	<0.6	0.2	#N/A	0.2	8.11	0.02	0.02	<0.02	—
W21R-4859	36288	280	290	ORE	FALSE	Monzonite	0.6	1.2	2.0	0.6	8.23	0.08	0.06	0.02	0.037
W21R-4859	36289	290	300	ORE	FALSE	Monzonite	0.9	0.3	0.3	-0.6	8.21	0.09	0.06	0.03	0.021
W21R-4859	36290	300	310	WASTE	FALSE	Monzonite	<0.6	0.3	#N/A	0.3	8.39	0.04	0.04	<0.02	0.008
W21R-4859	36291	310	320	WASTE	FALSE	Monzonite	0.6	0.5	0.8	-0.1	8.29	0.07	0.05	0.02	0.005
W21R-4859	36292	320	330	WASTE	TRUE	Monzonite	0.9	0.7	0.8	-0.2	8.48	0.06	0.03	0.03	0.005
W21R-4859	36293	330	340	WASTE	TRUE	Monzonite	0.9	0.3	0.3	-0.6	8.58	0.07	0.04	0.03	0.008
W21R-4860	36328	270	280	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	7.54	0.02	0.02	<0.02	—
W21R-4860	36329	280	290	WASTE	FALSE	Monzonite	<0.6	0.7	#N/A	0.7	7.68	<0.02	0.01	<0.02	—
W21R-4860	36330	290	300	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	7.90	0.06	0.06	<0.02	—
W21R-4860	36331	300	310	WASTE	FALSE	Monzonite	<0.6	0.5	#N/A	0.5	7.77	0.06	0.05	<0.02	—
W21R-4860	36332	310	320	WASTE	FALSE	Monzonite	0.9	0.5	0.6	-0.4	7.88	0.06	0.03	0.03	0.002
W21R-4860	36333	320	330	WASTE	FALSE	Monzonite	1.9	1.0	0.5	-0.9	7.56	0.10	0.04	0.06	0.001

Table D–5B. Acid Base Accounting for Monzonite Porphyry (Current Data) (Page 25 of 25)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4860	36334	330	340	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	7.98	0.05	0.05	<0.02	0.001
W21R-4860	36337	340	350	WASTE	FALSE	Monzonite	<0.6	0.3	#N/A	0.3	7.99	<0.02	0.02	<0.02	0.001
W21R-4860	36341	350	360	WASTE	FALSE	Monzonite	<0.6	1.5	#N/A	1.5	7.97	<0.02	0.02	<0.02	0.002
W21R-4860	36342	360	370	WASTE	FALSE	Monzonite	<0.6	0.8	#N/A	0.8	7.76	0.04	0.03	<0.02	—
W21R-4861	36372	240	250	WASTE	FALSE	Monzonite	4.7	0.5	0.1	-4.2	6.92	0.20	0.05	0.15	—
W21R-4861	36373	250	260	WASTE	FALSE	Monzonite	15.3	1.3	<0.1	-14.0	5.24	0.54	0.05	0.49	—
W21R-4861	36374	260	270	WASTE	FALSE	Monzonite	9.1	0.3	<0.1	-8.8	5.96	0.33	0.04	0.29	—
W21R-4861	36375	270	280	WASTE	FALSE	Monzonite	6.6	0.5	<0.1	-6.1	6.57	0.26	0.05	0.21	0.002
W21R-4861	36376	280	290	WASTE	FALSE	Monzonite	1.9	0.7	0.4	-1.2	7.35	0.08	0.02	0.06	0.004
W21R-4861	36377	290	300	WASTE	FALSE	Monzonite	3.1	5.7	1.8	2.6	7.52	0.12	0.02	0.10	—
W21R-4861	36378	300	310	WASTE	FALSE	Monzonite	6.9	4.3	0.6	-2.6	8.08	0.24	0.02	0.22	—
W21R-4861	36379	310	320	WASTE	FALSE	Monzonite	18.4	4.5	0.2	-13.9	7.87	0.61	0.02	0.59	—
W21R-4863	36521	320	330	ORE	TRUE	Monzonite	<0.6	0.5	#N/A	0.5	8.26	0.08	0.08	<0.02	0.016
W21R-4863	36522	330	340	WASTE	TRUE	Monzonite	<0.6	0.8	#N/A	0.8	8.71	0.05	0.06	<0.02	0.011
W21R-4863	36525	340	350	WASTE	TRUE	Monzonite	<0.6	0.5	#N/A	0.5	8.69	0.04	0.05	<0.02	0.003
W21R-4863	36529	350	360	WASTE	TRUE	Monzonite	<0.6	0.5	#N/A	0.5	8.42	0.05	0.06	<0.02	0.004

Table D-6A. Acid Base Accounting for Phonolite Porphyry (Historical Data) (Page 1 of 6)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
1177	19413	30	40	WASTE	YES	Phonolite	1	14	14	13	0	0.01	0.01	0.01	0.01	0.01	0.001
1178	19434	40	50	WASTE	YES	Phonolite	1	24	24	23	0	0.03	0.01	0.01	0.01	0.01	0
1184	20368	20	30	WASTE	YES	Phonolite	1	10	10	9	0	0.01	0.01	0.01	0.01	0.01	0
FX3345	49178	70	80	WASTE	YES	Phonolite	0	41	41	41	0	0.01	—	—	—	—	—
FX3347	49303	20	30	WASTE	YES	Phonolite	0	58	58	59	0	0.05	0.03	—	—	—	—
FX3399	49320	40	50	WASTE	YES	Phonolite	0	50	50	49	7.5	0.05	0.03	0.01	0.01	—	—
FX3350	49503	70	80	WASTE	YES	Phonolite	0	62	62	63	0	0.08	0.05	—	0.01	—	—
FX3351	49569	80	90	WASTE	YES	Phonolite	0	66	66	67	0	0.04	0.01	—	0.01	—	—
FX3352	49632	60	70	WASTE	YES	Phonolite	0	64	64	65	0	0.06	0.03	—	0.02	—	—
FX3406	49646	50	60	WASTE	YES	Phonolite	0	21	21	22	7.8	0.09	0.08	—	—	—	—
FX3404	49955	50	60	WASTE	YES	Phonolite	0	50	50	50	8.3	0.03	0.02	—	0.01	—	—
FX3357	50009	80	90	WASTE	YES	Phonolite	0	64	64	64	0	0.04	0.02	—	—	—	—
FX3358	50075	90	100	WASTE	YES	Phonolite	0	64	64	65	0	0.07	0.04	—	0.01	—	—
FX3359	50136	50	60	WASTE	YES	Phonolite	0	65	65	66	0	0.07	0.04	—	0.02	—	—
FX3362	50334	80	90	WASTE	YES	Phonolite	0	68	68	69	0	0.06	0.04	—	0.01	—	—
FX3363	50402	110	120	WASTE	YES	Phonolite	0	62	62	62	0	0.05	0.03	—	—	—	—
FX3397	50430	40	50	WASTE	YES	Phonolite	0	6	6	5	7.3	—	—	—	—	—	—
FX3364	50467	110	120	WASTE	YES	Phonolite	0	59	59	60	8.3	0.06	0.04	—	0.01	—	—
FX3365	50530	90	100	WASTE	YES	Phonolite	0	67	67	67	8.5	0.02	—	—	—	—	—
FX3366	50595	90	100	WASTE	YES	Phonolite	0	57	57	58	8.3	0.01	—	—	—	—	—
FX3367	50660	90	100	WASTE	YES	Phonolite	0	66	66	67	8.4	0.04	0.02	—	—	—	—
FX3368	50722	60	70	WASTE	YES	Phonolite	0	64	64	64	8.3	0.02	0.01	—	—	—	—
FX3368	50733	170	180	WASTE	YES	Phonolite	0	47	47	48	8.1	0.04	0.02	—	—	—	—
FX3381	50745	80	90	WASTE	YES	Phonolite	0	60	60	61	8.3	0.08	0.05	—	0.02	—	—
FX3398	50760	30	40	WASTE	YES	Phonolite	0	57	57	56	8.6	0.03	—	—	0.02	—	—
FX3369	50791	100	110	WASTE	YES	Phonolite	0	69	69	69	8.4	0.06	0.03	0.01	0.01	—	—
FX3405	50808	40	50	WASTE	YES	Phonolite	0	47	47	48	8.4	0.05	0.02	—	0.02	—	—
FX3370	50854	80	90	WASTE	YES	Phonolite	0	60	60	60	8.2	0.02	—	—	—	—	—
FX3371	50920	90	100	WASTE	YES	Phonolite	0	66	66	66	8.3	0.06	0.04	—	0.01	—	—
FX3372	50984	80	90	WASTE	YES	Phonolite	0	66	66	67	8.5	0.08	0.06	—	0.01	—	—
FX3374	51111	50	60	WASTE	YES	Phonolite	0	3	3	3	7.1	0.01	—	—	—	—	—
FX3375	51177	60	70	WASTE	YES	Phonolite	0	55	55	54	8.5	0.01	—	0.01	—	—	—
FX3375	51180	90	100	WASTE	YES	Phonolite	0	73	73	73	8	0.01	—	—	—	—	—

Table D-6A. Acid Base Accounting for Phonolite Porphyry (Historical Data) (Page 2 of 6)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3376	51244	80	90	WASTE	YES	Phonolite	2	69	34.5	68	8.6	0.08	0.02	0.03	0.01	—	—
FX3379	51436	50	60	ORE	NO	Phonolite	5	17	3.4	13	7.3	0.19	0.04	—	0.13	0.02	0.011
FX3380	51508	120	130	WASTE	YES	Phonolite	0	65	65	66	8.4	0.05	0.03	—	0.01	—	—
FX3390	51965	40	50	WASTE	YES	Phonolite	0	61	61	61	9	0.04	0.02	—	0.01	—	—
FX3390	51976	150	160	WASTE	YES	Phonolite	0	51	51	51	8.4	0.05	0.04	—	—	—	—
FX3391	52014	30	40	WASTE	YES	Phonolite	0	60	60	61	8.7	0.04	0.02	—	—	—	—
FX3391	52025	140	150	WASTE	YES	Phonolite	2	62	31	60	9	0.08	0.02	—	0.04	0.02	—
FX3409	52354	30	40	WASTE	YES	Phonolite	0	51	51	52	8.6	0.04	0.01	—	0.02	—	—
FX3409	52365	140	150	WASTE	YES	Phonolite	0	57	57	58	8.5	0.05	0.02	0.01	0.02	—	—
FX3410	52405	40	50	WASTE	YES	Phonolite	0	65	65	64	8.5	0.03	0.01	—	0.01	—	—
FX3411	52460	90	100	WASTE	YES	Phonolite	0	43	43	43	8.1	0.03	0.01	—	—	—	—
FX3412	52512	110	120	WASTE	YES	Phonolite	0	65	65	65	8.3	0.02	0.01	—	—	—	—
FX3413	52562	110	120	WASTE	YES	Phonolite	0	64	64	65	8.4	0.02	—	—	—	—	—
FX3414	52611	100	110	WASTE	YES	Phonolite	0	69	69	70	8.3	0.04	0.03	—	—	—	—
FX3415	52661	100	110	WASTE	YES	Phonolite	0	61	61	62	8.1	0.03	0.02	—	—	—	—
FX3417	52760	90	100	WASTE	YES	Phonolite	0	58	58	58	8	—	—	—	—	—	—
FX3418	52808	70	80	WASTE	YES	Phonolite	0	55	55	56	8.3	0.04	0.02	—	—	—	—
FX3420	52909	80	90	WASTE	YES	Phonolite	0	38	38	38	7.8	0.02	0.01	—	—	—	—
1961	63092	140	150	WASTE	YES	Phonolite	1	38	38	37	0	0.02	0.01	0.01	0.01	0.01	0
FX3830	66220	40	50	WASTE	YES	Phonolite	—	47	0	47	8.7	0.01	—	—	0.01	—	—
FX3830	66224	80	90	WASTE	YES	Phonolite	—	28	0	27	8.7	—	—	—	—	—	—
FX3830	66228	120	130	WASTE	YES	Phonolite	—	53	0	52	8.8	0.04	0.02	—	0.01	—	—
FX3831	66285	40	50	WASTE	YES	Phonolite	—	47	0	47	8.6	0.01	—	—	—	—	—
FX3831	66289	80	90	WASTE	YES	Phonolite	—	61	0	61	9	0.02	—	—	0.01	—	—
FX3831	66293	120	130	WASTE	YES	Phonolite	—	64	0	63	8.9	0.03	0.01	—	0.01	—	—
FX3831	66297	160	170	WASTE	YES	Phonolite	—	57	0	56	8.9	0.01	—	0.01	—	—	—
FX3832	66345	40	50	WASTE	YES	Phonolite	—	52	0	51	8.8	0.03	—	—	0.03	—	—
FX3832	66349	80	90	WASTE	YES	Phonolite	—	51	0	51	8.5	0.02	—	0.01	—	—	—
FX3832	66353	120	130	WASTE	YES	Phonolite	—	55	0	54	8.9	0.03	—	0.01	0.02	—	—
FX3832	66357	160	170	WASTE	YES	Phonolite	—	49	0	48	8.5	0.04	0.02	0.02	—	—	—
FX3834	66479	80	90	WASTE	YES	Phonolite	—	45	0	44	8.7	0.03	0.01	0.02	—	—	—
FX3834	66483	120	130	WASTE	YES	Phonolite	—	43	0	43	8.6	0.05	0.03	—	0.01	—	—
FX3834	66491	200	210	ORE	YES	Phonolite	32	5	0	-27	7.7	1.1	0.08	—	0.13	0.89	0.014

Table D-6A. Acid Base Accounting for Phonolite Porphyry (Historical Data) (Page 3 of 6)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3834	66492	210	220	ORE	YES	Phonolite	25	5	0.2	-20	7.5	0.79	—	—	0.67	0.12	0.015
FX3835	66535	40	50	WASTE	YES	Phonolite	—	51	0	51	8.5	0.02	0.01	—	—	—	—
FX3835	66539	80	90	WASTE	YES	Phonolite	—	51	0	51	8.7	0.03	0.01	—	0.01	—	—
FX3835	66543	120	130	WASTE	YES	Phonolite	—	43	0	42	8.5	0.02	—	0.01	—	—	—
FX3835	66546	150	160	WASTE	YES	Phonolite	—	53	0	52	8.8	0.06	0.03	0.01	0.02	—	—
FX3835	66554	230	240	ORE	YES	Phonolite	1	17	0	16	8.8	0.05	0.01	—	0.02	0.01	0.048
FX3836	66595	40	50	WASTE	YES	Phonolite	—	55	0	55	8.6	0.03	0.01	—	0.01	—	—
FX3836	66599	80	90	WASTE	YES	Phonolite	—	49	0	48	8.8	0.03	—	—	0.02	—	—
FX3836	66603	120	130	WASTE	YES	Phonolite	—	53	0	52	9	0.03	—	—	0.02	—	—
FX3836	66607	160	170	WASTE	YES	Phonolite	1	53	0	52	8.7	0.05	0.01	0.02	0.01	—	—
FX3837	66655	40	50	WASTE	YES	Phonolite	1	51	0	50	8.3	0.05	0.02	—	0.04	—	—
FX3837	66659	80	90	WASTE	YES	Phonolite	—	40	0	40	8.5	0.02	—	0.02	—	—	—
FX3837	66663	120	130	WASTE	YES	Phonolite	—	48	0	47	8.6	0.04	0.02	—	0.01	—	—
FX3837	66671	200	210	WASTE	YES	Phonolite	5	8	0	4	7.6	0.15	—	0.02	0.13	—	—
FX3838	66723	120	130	WASTE	YES	Phonolite	—	49	0	49	8.8	0.03	0.01	—	0.02	—	—
FX3838	66727	160	170	WASTE	YES	Phonolite	—	35	0	35	8.3	0.02	—	0.01	-	—	—
FX3839	66765	40	50	WASTE	YES	Phonolite	—	53	0	53	9.1	0.01	—	—	0.01	—	—
FX3839	66769	80	90	WASTE	YES	Phonolite	—	55	0	54	8.5	0.01	—	—	—	—	—
FX3839	66773	120	130	WASTE	YES	Phonolite	—	46	0	45	8.1	0.02	0.01	0.01	—	—	—
FX3839	66777	160	170	WASTE	YES	Phonolite	—	42	0	41	7.9	0.04	0.01	0.02	0.01	—	—
FX3840	66805	40	50	WASTE	YES	Phonolite	—	65	0	64	8.7	0.03	—	—	0.02	—	—
FX3840	66809	80	90	WASTE	YES	Phonolite	—	57	0	57	8.5	0.02	—	—	0.01	—	—
FX3840	66813	120	130	WASTE	YES	Phonolite	—	54	0	54	8.7	0.01	—	—	—	—	—
FX3840	66817	160	170	WASTE	YES	Phonolite	—	58	0	57	8.8	0.05	0.03	0.01	0.02	—	—
FX3841	66860	90	100	WASTE	YES	Phonolite	—	65	0	64	8.9	0.02	—	—	0.02	—	—
FX3841	66864	130	140	WASTE	YES	Phonolite	—	61	0	60	9.1	0.02	—	—	0.02	—	—
FX3841	66868	170	180	WASTE	YES	Phonolite	—	62	0	61	8.7	0.06	0.03	0.02	0.01	—	—
FX3842	66920	40	50	WASTE	YES	Phonolite	—	62	0	61	9	0.03	—	—	—	0.01	—
FX3842	66924	80	90	WASTE	YES	Phonolite	—	56	0	56	8.8	0.04	0.02	—	0.01	—	—
FX3842	66928	120	130	WASTE	YES	Phonolite	—	57	0	57	8.8	0.01	—	0.01	—	—	—
FX3842	66932	160	170	WASTE	YES	Phonolite	—	60	60	59	8.5	0.06	0.04	0.02	0.01	—	—
FX3842	66960	440	450	WASTE	YES	Phonolite	2	88	44	86	8.6	0.08	—	0.01	0.07	—	—
FX3843	66970	40	50	WASTE	YES	Phonolite	—	60	60	60	8.9	0.03	0.02	—	0.01	—	—



Table D-6A. Acid Base Accounting for Phonolite Porphyry (Historical Data) (Page 4 of 6)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3843	66974	80	90	WASTE	YES	Phonolite	—	52	52	51	8.7	0.02	—	—	—	—	—
FX3843	66978	120	130	WASTE	YES	Phonolite	—	55	55	55	8.8	0.02	—	—	—	—	—
FX3843	66982	160	170	WASTE	YES	Phonolite	—	62	62	61	8.6	0.04	0.01	—	0.02	—	—
FX3845	67034	30	40	WASTE	YES	Phonolite	—	45	0	44	8.5	0.01	—	—	—	—	—
FX3844	67038	70	80	WASTE	YES	Phonolite	—	50	0	50	8.7	0.02	0.01	—	—	—	—
FX3844	67042	110	120	WASTE	YES	Phonolite	—	53	0	53	8.6	0.01	—	—	—	—	—
FX3844	67046	150	160	WASTE	YES	Phonolite	—	57	0	56	8.6	0.04	0.02	—	0.01	—	—
FX3845	67095	40	50	WASTE	YES	Phonolite	—	58	0	57	9.1	0.02	—	—	0.01	—	—
FX3845	67099	80	90	WASTE	YES	Phonolite	—	42	0	42	8.7	—	—	—	—	—	—
FX3845	67103	120	130	WASTE	YES	Phonolite	—	52	0	52	8.7	—	—	—	—	—	—
FX3845	67107	160	170	WASTE	YES	Phonolite	—	42	0	42	8.4	0.03	0.02	0.02	—	-	-
FX3845	67111	200	210	WASTE	YES	Phonolite	—	39	0	38	7.9	—	—	—	—	—	—
FX3846	67145	40	50	WASTE	YES	Phonolite	—	57	0	57	8.8	0.02	—	0.01	—	—	—
FX3846	67149	80	90	WASTE	YES	Phonolite	—	49	0	48	8.7	—	—	—	—	—	—
FX3846	67153	120	130	WASTE	YES	Phonolite	—	55	0	55	8.7	0.03	0.01	—	0.01	—	—
FX3846	67157	160	170	WASTE	YES	Phonolite	—	45	0	44	8.4	0.05	0.02	0.01	0.01	—	—
FX3846	67161	200	210	WASTE	YES	Phonolite	3	71	0	68	8.5	0.1	—	—	0.08	—	—
FX3920	69582	230	240	WASTE	YES	Phonolite	—	132	132	132	8.6	0.02	—	0.01	—	—	—
FX3923	69929	270	280	WASTE	YES	Phonolite	—	60	60	60	8.3	—	—	—	—	—	—
FX4115	76250	0	10	WASTE	YES	Phonolite	3	59	19.7	56	7.8	0.49	0.4	—	0.04	0.05	0.004
FX4116	76255	0	10	WASTE	YES	Phonolite	—	31	31	30	7.1	0.04	—	—	0.01	0.02	—
FX4117	76260	0	10	WASTE	NO	Phonolite	2	18	9	16	7.5	0.07	—	—	0.03	0.04	—
FX4247	80828	60	70	ORE	YES	Phonolite	9	5	0.6	-4	0	0.3	0.03	—	0.09	0.18	0.028
FX4247	80848	260	270	WASTE	NO	Phonolite	—	114	114	113	0	0.03	—	—	—	0.02	—
FX4247	80852	300	310	WASTE	NO	Phonolite	—	95	95	94	0	0.03	—	—	—	0.03	—
FX4248	80885	30	40	WASTE	YES	Phonolite	1	47	47	46	0	0.05	0.01	—	0.01	0.02	—
FX4248	80909	270	280	WASTE	YES	Phonolite	9	11	1.2	1	0	0.32	0.03	—	0.21	0.08	—
FX4248	80913	310	320	WASTE	YES	Phonolite	2	24	12	22	0	0.06	—	—	0.04	0.02	—
FX4249	80993	270	280	WASTE	YES	Phonolite	2	103	51.5	100	0	0.08	—	—	0.05	0.03	—
FX4249	80997	310	320	WASTE	NO	Phonolite	—	83	83	82	0	0.03	—	—	—	0.03	—
FX4250	81049	230	240	ORE	YES	Phonolite	—	174	174	173	0	0.02	—	—	—	0.02	0.028
FX4250	81053	270	280	ORE	YES	Phonolite	2	6	3	5	0	0.06	—	—	0.03	0.03	0.033
FX4250	81057	310	320	ORE	YES	Phonolite	2	10	5	7	0	0.09	—	—	0.05	0.03	0.072

Table D-6A. Acid Base Accounting for Phonolite Porphyry (Historical Data) (Page 5 of 6)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4251	81109	230	240	WASTE	YES	Phonolite	—	62	62	62	0	0.03	—	—	—	0.02	—
FX4251	81113	270	280	WASTE	YES	Phonolite	—	96	96	96	0	0.02	—	—	—	0.02	—
FX4251	81117	310	320	WASTE	YES	Phonolite	—	156	156	155	0	0.02	—	—	—	0.02	—
FX4410	83350	150	160	WASTE	YES	Phonolite		58		57	0	0.02				0.02	—
FX4409	83396	150	160	WASTE	YES	Phonolite	2	115		114	0	0.06	0	0	0.02	0.03	—
FX4415	83438	110	120	WASTE	YES	Phonolite		181		180	0	0.02				0.02	—
FX4414	83484	110	120	WASTE	YES	Phonolite		72		72	0	0.02				0.02	—
FX4413	83578	110	120	WASTE	YES	Phonolite		87		86	0	0.04	0.02			0.03	—
FX4461	83688	150	160	WASTE	YES	Phonolite		39		38	0	0.03				0.03	—
FX4458	83736	150	160	WASTE	YES	Phonolite		49		48	0	0.03				0.03	—
FX4458	83760	390	400	WASTE	YES	Phonolite	1	7		6	0	0.04				0.03	—
FX4431	83790	270	280	WASTE	YES	Phonolite		61		60	0	0.03				0.03	—
FX4416	83887	150	160	WASTE	YES	Phonolite		254		253	0	0.02				0.02	—
FX4418	83934	150	160	WASTE	YES	Phonolite		105		104	0	0.02				0.02	—
FX4419	83980	150	160	WASTE	YES	Phonolite	1	24		23	0	0.04				0.03	—
FX4420	84027	150	160	WASTE	YES	Phonolite	1	22		20	0	0.04				0.03	—
FX4421	84078	190	200	WASTE	YES	Phonolite		110		109	0	0.03				0.03	—
FX4423	84182	230	240	WASTE	YES	Phonolite	1	28		26	0	0.04				0.03	—
FX4427	84233	230	240	WASTE	YES	Phonolite		48		47	0	0.02				0.02	—
FX4417	84330	150	160	WASTE	YES	Phonolite	1	18		17	0	0.04				0.04	—
FX4425	84384	230	240	WASTE	YES	Phonolite		57		56	0	0.02				0.03	—
FX4426	84437	230	240	ORE	YES	Phonolite	1	24		22	0	0.04				0.04	0.013
FX4422	84587	190	200	WASTE	YES	Phonolite	1	27		25	0	0.04				0.03	—
FX4424	84642	230	240	WASTE	YES	Phonolite	1	26		25	0	0.05				0.03	—
FX4428	84688	190	200	WASTE	YES	Phonolite		34		33	0	0.03				0.03	—
FX4459	84780	150	160	WASTE	YES	Phonolite	1	4		3	0	0.03				0.03	—
FX4449	85692	270	280	WASTE	YES	Phonolite		76		75	0	0.03				0.03	—
FX4449	85696	310	320	ORE	YES	Phonolite		16		15	0	0.04				0.03	0.011
FX4450	85761	310	320	WASTE	YES	Phonolite		54		53	0	0.03				0.03	—
FX4450	85765	350	360	WASTE	YES	Phonolite	3	108		105	0	0.11	0.02		0.06	0.03	—
FX4450	85769	390	400	WASTE	YES	Phonolite		33		32	0	0.03				0.03	—
FX4451	85803	30	40	WASTE	YES	Phonolite	3	2		-2	0	0.11			0.03	0.08	—
FX4451	85827	270	280	WASTE	YES	Phonolite		80		79	0	0.03				0.03	—

Table D-6A. Acid Base Accounting for Phonolite Porphyry (Historical Data) (Page 6 of 6)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4451	85831	310	320	WASTE	YES	Phonolite		70		69	0	0.03				0.03	—
FX4451	85835	350	360	WASTE	YES	Phonolite	1	27		26	0	0.04				0.03	—
FX4452	85883	30	40	ORE	YES	Phonolite	9	9		0	0	0.36	0.06		0.08	0.22	0.034
FX4462	85954	190	200	WASTE	YES	Phonolite	1	261		260	0	0.04				0.03	—
FX4460	86155	150	160	WASTE	YES	Phonolite	1	66		65	0	0.04				0.04	—
2810	92344	30	40	WASTE	YES	Phonolite	0	1	1	1	0	0.01	0	0	0	0	0.009
2824	92637	60	70	WASTE	YES	Phonolite	1	3	3	2	0	0.02	0	0	0	0	0
2903	95930	100	110	WASTE	YES	Phonolite	1	1	1	0	0	0.03	0	0	0	0	0.002
2904	95947	70	80	WASTE	YES	Phonolite	1	1	1	0	0	0.02	0	0	0	0	0.002



Table D–6B. Acid Base Accounting for Phonolite Porphyry (Current Data) (Page 1 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4753	28503	20	30	WASTE	FALSE	Phonolite	<0.6	14.8	#N/A	14.8	7.92	<0.02	0.01	<0.02	—
W21R–4753	28507	60	70	WASTE	FALSE	Phonolite	<0.6	23.5	#N/A	23.5	8.12	0.04	0.08	<0.02	—
W21R–4753	28593	780	790	ORE	FALSE	Phonolite	<0.6	108	#N/A	108	8.99	0.03	0.02	<0.02	0.013
W21R–4758	28888	10	20	WASTE	FALSE	Phonolite	<0.6	35.3	#N/A	35.3	7.88	0.03	0.06	<0.02	—
W21R–4759	28939	20	30	WASTE	FALSE	Phonolite	<0.6	29.1	#N/A	29.1	9.25	0.04	0.03	<0.02	0.002
W21R–4759	28943	60	70	WASTE	FALSE	Phonolite	<0.6	2.2	#N/A	2.2	8.14	0.03	0.02	<0.02	—
W21R–4761	29098	0	10	WASTE	FALSE	Phonolite	<0.6	18.3	#N/A	18.3	7.29	0.03	0.05	<0.02	0.002
W21R–4761	29102	40	50	WASTE	FALSE	Phonolite	<0.6	5	#N/A	5	7.54	<0.02	0.02	<0.02	—
W21R–4762	29158	0	10	WASTE	FALSE	Phonolite	<0.6	31.3	#N/A	31.3	7.31	0.03	0.09	<0.02	—
W21R–4762	29162	40	50	WASTE	FALSE	Phonolite	<0.6	8.5	#N/A	8.5	7.57	0.05	0.05	<0.02	0.006
W21R–4762	29166	80	90	WASTE	FALSE	Phonolite									0.003
W21R–4765	29425	30	40	WASTE	FALSE	Phonolite	<0.6	0.7	#N/A	0.7	7.33	<0.02	<0.01	<0.02	—
W21R–4767	29591	30	40	WASTE	FALSE	Phonolite	0.6	5	8.3	4.4	7.31	0.03	0.01	0.02	0.003
W21R–4768	29687	30	40	WASTE	FALSE	Phonolite	<0.6	21.4	#N/A	21.4	7.57	0.04	0.07	<0.02	—
W21R–4769	29763	20	30	WASTE	FALSE	Phonolite	<0.6	3.5	#N/A	3.5	7.04	<0.02	<0.01	<0.02	—
W21R–4773	30050	30	40	WASTE	FALSE	Phonolite	<0.6	52	#N/A	52	8.43	0.08	0.09	<0.02	—
W21R–4773	30054	70	80	WASTE	FALSE	Phonolite	0.9	47.7	53	46.8	8.34	0.07	0.04	0.03	—
W21R–4773	30058	110	120	WASTE	FALSE	Phonolite	<0.6	10.8	#N/A	10.8	8.03	<0.02	0.02	<0.02	—
W21R–4774	30142	10	20	WASTE	FALSE	Phonolite	<0.6	33.9	#N/A	33.9	7.86	0.04	0.06	<0.02	—
W21R–4774	30146	50	60	WASTE	FALSE	Phonolite	<0.6	30.7	#N/A	30.7	8.33	0.03	0.03	<0.02	—
W21R–4774	30150	90	100	WASTE	FALSE	Phonolite	<0.6	14.6	#N/A	14.6	7.9	<0.02	0.03	<0.02	—
W21R–4775	30230	0	10	WASTE	TRUE	Phonolite	<0.6	49	#N/A	49	7.52	0.05	0.07	<0.02	—
W21R–4775	30234	40	50	WASTE	TRUE	Phonolite	<0.6	17.1	#N/A	17.1	8.11	<0.02	0.05	<0.02	—
W21R–4775	30238	80	90	WASTE	TRUE	Phonolite	<0.6	33.9	#N/A	33.9	8.1	0.04	0.05	<0.02	—
W21R–4775	30242	120	130	WASTE	TRUE	Phonolite	<0.6	28.5	#N/A	28.5	8.1	0.05	0.05	<0.02	—
W21R–4776	30326	20	30	WASTE	FALSE	Phonolite	<0.6	47.3	#N/A	47.3	8.49	0.03	0.04	<0.02	—
W21R–4776	30330	60	70	WASTE	FALSE	Phonolite	<0.6	49.2	#N/A	49.2	9.26	0.05	0.06	<0.02	—
W21R–4776	30356	300	310	WASTE	FALSE	Phonolite	<0.6	11.1	#N/A	11.1	8.25	<0.02	<0.01	<0.02	—
W21R–4777	30421	30	40	WASTE	FALSE	Phonolite	<0.6	41.2	#N/A	41.2	8.88	0.04	0.09	<0.02	—
W21R–4777	30425	70	80	WASTE	FALSE	Phonolite	<0.6	40.3	#N/A	40.3	9.04	0.09	0.2	<0.02	—
W21R–4778	30502	0	10	WASTE	FALSE	Phonolite	<0.6	0.7	#N/A	0.7	6.12	0.02	0.02	<0.02	—
W21R–4785	31071	170	180	WASTE	FALSE	Phonolite	<0.6	3	#N/A	3	7.62	<0.02	<0.01	<0.02	—
W21R–4785	31072	180	190	WASTE	TRUE	Phonolite	<0.6	3	#N/A	3	7.59	<0.02	<0.01	<0.02	—
W21R–4785	31073	190	200	WASTE	TRUE	Phonolite	<0.6	8.8	#N/A	8.8	7.83	<0.02	0.01	<0.02	—
W21R–4785	31074	200	210	WASTE	FALSE	Phonolite	<0.6	21.5	#N/A	21.5	7.73	<0.02	0.02	<0.02	—



Table D–6B. Acid Base Accounting for Phonolite Porphyry (Current Data) (Page 2 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R–4785	31075	210	220	WASTE	TRUE	Phonolite	<0.6	37	#N/A	37	8.07	0.02	0.04	<0.02	—
W21R–4785	31076	220	230	ORE	TRUE	Phonolite	<0.6	1.2	#N/A	1.2	7.78	0.04	0.03	<0.02	0.014
W21R–4786	31140	160	170	WASTE	FALSE	Phonolite	0.6	21.9	36.5	21.3	8.26	0.1	0.08	0.02	0.003
W21R–4786	31143	170	180	WASTE	TRUE	Phonolite	0.6	27.9	46.5	27.3	8.39	0.07	0.05	0.02	—
W21R–4786	31144	180	190	WASTE	TRUE	Phonolite	<0.6	15.9	#N/A	15.9	7.74	0.04	0.05	<0.02	0.002
W21R–4786	31148	220	230	WASTE	FALSE	Phonolite	<0.6	0.7	#N/A	0.7	7.07	<0.02	0.02	<0.02	—
W21R–4786	31149	230	240	WASTE	TRUE	Phonolite	<0.6	3.2	#N/A	3.2	6.96	<0.02	0.02	<0.02	—
W21R–4786	31150	240	250	WASTE	TRUE	Phonolite	<0.6	19.3	#N/A	19.3	8.1	<0.02	0.01	<0.02	—
W21R–4786	31151	250	260	WASTE	TRUE	Phonolite	<0.6	19.8	#N/A	19.8	8.6	0.03	0.03	<0.02	—
W21R–4786	31152	260	270	WASTE	FALSE	Phonolite	0.6	31.6	52.7	31	8.58	0.05	0.03	0.02	—
W21R–4786	31153	270	280	WASTE	FALSE	Phonolite	0.6	26.4	44	25.8	8.6	0.06	0.04	0.02	0.006
W21R–4787	31212	160	170	WASTE	FALSE	Phonolite	1.9	32.9	17.3	31	8.79	0.11	0.05	0.06	0.002
W21R–4787	31215	170	180	WASTE	FALSE	Phonolite	<0.6	41.3	#N/A	41.3	8.79	0.05	0.05	<0.02	—
W21R–4787	31216	180	190	WASTE	FALSE	Phonolite	<0.6	45.8	#N/A	45.8	8.99	0.04	0.04	<0.02	—
W21R–4787	31217	190	200	WASTE	FALSE	Phonolite	<0.6	52	#N/A	52	9.36	0.02	0.03	<0.02	—
W21R–4787	31218	200	210	WASTE	FALSE	Phonolite	<0.6	42.9	#N/A	42.9	8.88	0.04	0.06	<0.02	0.001
W21R–4787	31219	210	220	WASTE	FALSE	Phonolite	<0.6	44.4	#N/A	44.4	8.93	<0.02	0.01	<0.02	—
W21R–4787	31220	220	230	WASTE	FALSE	Phonolite	<0.6	40	#N/A	40	8.7	<0.02	0.03	<0.02	—
W21R–4787	31221	230	240	WASTE	FALSE	Phonolite	<0.6	47.2	#N/A	47.2	8.98	<0.02	0.02	<0.02	—
W21R–4787	31222	240	250	WASTE	FALSE	Phonolite	<0.6	51.7	#N/A	51.7	9.05	<0.02	0.04	<0.02	—
W21R–4787	31223	250	260	WASTE	FALSE	Phonolite	0.9	42.6	47.3	41.7	8.93	0.1	0.07	0.03	—
W21R–4787	31224	260	270	WASTE	FALSE	Phonolite	<0.6	39.3	#N/A	39.3	9.03	0.04	0.07	<0.02	—
W21R–4787	31225	270	280	WASTE	TRUE	Phonolite	<0.6	37.1	#N/A	37.1	9.23	0.09	0.08	<0.02	—
W21R–4787	31226	280	290	WASTE	FALSE	Phonolite	0.6	12.7	21.2	12.1	7.89	0.54	0.52	0.02	0.004
W21R–4788	31287	170	180	WASTE	FALSE	Phonolite	1.3	11.3	8.69	10	7.81	0.06	0.02	0.04	—
W21R–4788	31288	180	190	WASTE	TRUE	Phonolite	2.5	6.5	2.6	4	7.75	0.09	0.01	0.08	—
W21R–4788	31289	190	200	WASTE	FALSE	Phonolite	5	5.8	1.16	0.8	7.92	0.17	0.01	0.16	—
W21R–4788	31290	200	210	WASTE	TRUE	Phonolite	3.4	9.5	4.03	10.3	8.01	0.11	<0.01	0.11	—
W21R–4788	31291	210	220	WASTE	FALSE	Phonolite	0.9	29.3	32.6	28.4	8.55	0.04	0.01	0.03	—
W21R–4788	31292	220	230	WASTE	FALSE	Phonolite	<0.6	32.7	#N/A	32.7	8.6	<0.02	0.02	<0.02	0.001
W21R–4788	31293	230	240	WASTE	FALSE	Phonolite	<0.6	37.3	#N/A	37.3	8.79	<0.02	0.03	<0.02	—
W21R–4788	31294	240	250	WASTE	TRUE	Phonolite	<0.6	45.2	#N/A	45.2	8.92	<0.02	0.03	<0.02	—
W21R–4788	31295	250	260	WASTE	TRUE	Phonolite	<0.6	43.2	#N/A	43.2	8.85	<0.02	0.02	<0.02	—
W21R–4788	31296	260	270	WASTE	TRUE	Phonolite	0.9	47.7	53	46.8	8.81	0.06	0.03	0.03	—
W21R–4788	31297	270	280	WASTE	TRUE	Phonolite	0.9	36.3	40.3	35.4	8.98	0.1	0.07	0.03	—

Table D–6B. Acid Base Accounting for Phonolite Porphyry (Current Data) (Page 3 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4789	31359	170	180	WASTE	FALSE	Phonolite	0.3	35.8	-999	35.8	8.45	0.06	0.10	0.01	—
W21R-4789	31360	180	190	WASTE	FALSE	Phonolite	0.3	41.5	-999	41.5	8.75	0.04	0.14	0.01	—
W21R-4789	31361	190	200	WASTE	FALSE	Phonolite	0.3	47.0	-999	47.0	9.19	0.02	0.04	0.01	—
W21R-4789	31362	200	210	WASTE	FALSE	Phonolite	1.6	46.8	29.3	45.2	7.75	0.07	0.02	0.05	—
W21R-4789	31363	210	220	WASTE	FALSE	Phonolite	1.3	48.8	37.5	47.5	8.88	0.04	0.005	0.04	—
W21R-4789	31364	220	230	WASTE	FALSE	Phonolite	0.3	36.7	-999	36.7	8.67	0.05	0.09	0.01	—
W21R-4789	31365	230	240	WASTE	FALSE	Phonolite	2.2	33.9	15.4	31.7	8.59	0.11	0.04	0.07	—
W21R-4789	31366	240	250	WASTE	FALSE	Phonolite	1.6	14.9	9.3	13.3	8.64	0.08	0.03	0.05	—
W21R-4789	31367	250	260	WASTE	FALSE	Phonolite	0.3	8.20	-999	8.20	8.96	0.04	0.04	0.01	—
W21R-4789	31368	260	270	WASTE	TRUE	Phonolite	0.3	12.1	-999	12.1	8.37	0.01	0.02	0.01	—
W21R-4789	31369	270	280	WASTE	TRUE	Phonolite	0.3	14.9	-999	14.9	8.19	0.01	0.03	0.01	—
W21R-4789	31370	280	290	WASTE	TRUE	Phonolite	0.3	5.00	-999	5.00	7.78	0.07	0.07	0.01	0.002
W21R-4790	31438	240	250	WASTE	FALSE	Phonolite	1.3	36.8	28.3	35.5	9.12	0.06	0.02	0.04	—
W21R-4790	31439	250	260	WASTE	FALSE	Phonolite	<0.6	38.5	#N/A	38.5	9.36	0.05	0.05	<0.02	—
W21R-4790	31440	260	270	WASTE	FALSE	Phonolite	0.9	43.3	48.1	42.4	8.87	0.08	0.05	0.03	—
W21R-4790	31441	270	280	WASTE	FALSE	Phonolite	0.6	43.3	72.2	42.7	8.91	0.03	0.01	0.02	—
W21R-4790	31442	280	290	WASTE	FALSE	Phonolite	14.7	17.4	1.2	2.7	8.49	0.48	0.01	0.47	—
W21R-4790	31445	310	320	WASTE	FALSE	Phonolite	2.5	35.7	14.3	33.2	8.79	0.10	0.02	0.08	—
W21R-4790	31446	320	330	WASTE	FALSE	Phonolite	1.6	46.3	28.9	44.7	9.53	0.08	0.03	0.05	—
W21R-4790	31447	330	340	WASTE	FALSE	Phonolite	1.3	39.5	30.4	38.2	9.30	0.07	0.03	0.04	—
W21R-4790	31450	340	350	WASTE	FALSE	Phonolite	9.4	10.6	1.1	1.2	8.87	0.32	0.02	0.30	—
W21R-4792	31551	20	30	WASTE	FALSE	Phonolite	0.3	35.8	-999	35.8	8.40	0.03	0.04	0.01	—
W21R-4793	31854	0	10	WASTE	TRUE	Phonolite	0.3	18.3	-999	18.3	7.86	0.01	0.005	0.01	—
W21R-4793	31858	40	50	WASTE	TRUE	Phonolite	0.3	44.1	-999	44.1	8.84	0.05	0.06	0.01	—
W21R-4796	32187	0	10	WASTE	FALSE	Phonolite	0.3	60.9	-999	60.9	8.07	0.04	0.04	0.01	—
W21R-4799	31999	0	10	WASTE	FALSE	Phonolite	<0.6	19.0	#N/A	19.0	7.22	<0.02	0.02	<0.02	—
W21R-4799	32003	40	50	WASTE	FALSE	Phonolite	<0.6	16.2	#N/A	16.2	7.58	<0.02	0.01	<0.02	—
W21R-4800	32093	0	10	WASTE	FALSE	Phonolite	<0.6	34.0	#N/A	34.0	7.24	<0.02	0.03	<0.02	—
W21R-4800	32097	40	50	WASTE	FALSE	Phonolite	<0.6	23.0	#N/A	23.0	7.90	0.02	0.02	<0.02	0.004
W21R-4801	32264	0	10	WASTE	FALSE	Phonolite	<0.6	25.1	#N/A	25.1	7.24	0.07	0.07	<0.02	0.003
W21R-4803	32454	20	30	WASTE	FALSE	Phonolite	<0.6	10.3	#N/A	10.3	7.66	<0.02	0.02	<0.02	—
W21R-4809	33001	0	10	WASTE	FALSE	Phonolite	<0.6	17.2	#N/A	17.2	7.46	<0.02	0.02	<0.02	—
W21R-4813	33377	0	10	WASTE	TRUE	Phonolite	<0.6	16.3	#N/A	16.3	6.88	<0.02	0.03	<0.02	—
W21R-4813	33381	40	50	WASTE	TRUE	Phonolite	<0.6	29.4	#N/A	29.4	7.99	0.06	0.05	<0.02	—

Table D–6B. Acid Base Accounting for Phonolite Porphyry (Current Data) (Page 4 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4814	33469	0	10	WASTE	TRUE	Phonolite	<0.6	33.3	#N/A	33.3	7.87	0.02	0.09	<0.02	—
W21R-4814	33473	40	50	WASTE	TRUE	Phonolite	<0.6	16.8	#N/A	16.8	7.74	<0.02	0.02	<0.02	—
W21R-4815	33535	10	20	WASTE	FALSE	Phonolite	<0.6	11.2	#N/A	11.2	7.42	0.02	0.03	<0.02	—
W21R-4815	33539	50	60	WASTE	FALSE	Phonolite	<0.6	24.9	#N/A	24.9	8.09	0.04	0.09	<0.02	—
W21R-4817	33817	10	20	WASTE	FALSE	Phonolite	<0.6	21.8	#N/A	21.8	8.76	0.02	0.03	<0.02	—
W21R-4817	33821	50	60	WASTE	FALSE	Phonolite	<0.6	35.7	#N/A	35.7	8.28	0.07	0.06*	<0.02	—
W21R-4818	33722	0	10	WASTE	TRUE	Phonolite	<0.6	24.4	#N/A	24.4	8.05	<0.02	0.06	<0.02	—
W21R-4818	33726	40	50	WASTE	TRUE	Phonolite	<0.6	36.9	#N/A	36.9	9.10	0.11	0.18	<0.02	—
W21R-4819	34857	0	10	WASTE	FALSE	Phonolite	<0.6	21.0	#N/A	21.0	7.40	<0.02	0.03	<0.02	0.00005
W21R-4819	34861	40	50	WASTE	FALSE	Phonolite	<0.6	61.1	#N/A	61.1	8.67	0.07	0.08	<0.02	0.0002
W21R-4819	34865	80	90	WASTE	FALSE	Phonolite	<0.6	12.8	#N/A	12.8	8.64	<0.02	0.01	<0.02	0.0001
W21R-4821	33945	0	10	WASTE	FALSE	Phonolite	0.6	24.0	40.0	23.4	8.80	0.08	0.06	0.02	—
W21R-4821	33949	40	50	WASTE	FALSE	Phonolite	<0.6	26.4	#N/A	26.4	9.30	0.12	0.15	<0.02	—
W21R-4822	34039	0	10	WASTE	FALSE	Phonolite	<0.6	8.8	#N/A	8.8	7.07	0.02	0.01	<0.02	0.0002
W21R-4823	34133	0	10	WASTE	FALSE	Phonolite	<0.6	28.7	#N/A	28.7	8.99	0.11	0.16	<0.02	—
W21R-4824	34227	0	10	WASTE	FALSE	Phonolite	<0.6	8.5	#N/A	8.5	6.94	<0.02	0.04	<0.02	0.00005
W21R-4824	34231	40	50	WASTE	FALSE	Phonolite	<0.6	8.4	#N/A	8.4	8.69	0.04	0.15	<0.02	0.0011
W21R-4824	34235	80	90	WASTE	FALSE	Phonolite	<0.6	19.2	#N/A	19.2	8.49	0.05	0.06	<0.02	0.0003
W21R-4824	34239	120	130	WASTE	FALSE	Phonolite	<0.6	22.7	#N/A	22.7	9.09	0.10	0.09	<0.02	0.00005
W21R-4825	34323	20	30	WASTE	FALSE	Phonolite	1.3	39.0	30.2	37.8	8.09	0.09	0.05	0.04	0.0001
W21R-4825	34327	60	70	WASTE	FALSE	Phonolite	<0.6	39.8	#N/A	39.8	8.68	0.09	0.19	<0.02	0.00005
W21R-4825	34331	100	110	WASTE	FALSE	Phonolite	<0.6	40.5	#N/A	40.5	8.80	0.10	0.18	<0.02	0.00005
W21R-4826	34416	10	20	WASTE	FALSE	Phonolite	<0.6	17.6	#N/A	17.6	7.41	<0.02	0.02	<0.02	0.0002
W21R-4826	34420	50	60	WASTE	FALSE	Phonolite	<0.6	30.4	#N/A	30.4	8.69	0.04	0.07	<0.02	0.00005
W21R-4826	34424	90	100	WASTE	FALSE	Phonolite	<0.6	11.4	#N/A	11.4	8.04	<0.02	0.02	<0.02	0.0025
W21R-4827	34509	0	10	WASTE	FALSE	Phonolite	0.6	40.0	66.7	39.4	7.85	0.11	0.09	0.02	0.00005
W21R-4827	34513	40	50	WASTE	FALSE	Phonolite	0.9	38.5	42.8	37.6	8.87	0.11	0.08	0.03	0.0005
W21R-4857	36146	220	230	WASTE	FALSE	Phonolite	1.9	80.0	42.1	78.1	8.71	0.06	<0.01	0.06	0.00005
W21R-4861	36380	320	330	WASTE	FALSE	Phonolite	15.9	4.2	0.3	-11.7	7.98	0.54	0.03	0.51	—
W21R-4861	36381	330	340	WASTE	FALSE	Phonolite	9.1	22.6	2.5	13.5	7.94	0.33	0.04	0.29	—
W21R-4861	36384	340	350	WASTE	FALSE	Phonolite	5.6	39.3	7.0	33.7	8.21	0.20	0.02	0.18	—
W21R-4861	36388	350	360	WASTE	TRUE	Phonolite	3.1	51.5	16.6	48.4	8.46	0.11	0.01	0.10	—
W21R-4861	36389	360	370	WASTE	TRUE	Phonolite	2.5	75.8	30.3	73.3	8.85	0.09	0.01	0.08	—
W21R-4863	36503	160	170	WASTE	TRUE	Phonolite	<0.6	38.9	#N/A	38.9	8.78	0.03	0.02	<0.02	—

Table D–6B. Acid Base Accounting for Phonolite Porphyry (Current Data) (Page 5 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4863	36506	170	180	WASTE	TRUE	Phonolite	<0.6	25.2	#N/A	25.2	8.49	0.04	0.04	<0.02	—
W21R-4863	36510	210	220	WASTE	TRUE	Phonolite	<0.6	36.1	#N/A	36.1	8.59	0.02	0.02	<0.02	—
W21R-4864	36549	160	170	WASTE	FALSE	Phonolite	<0.6	36.5	#N/A	36.5	8.42	0.04	0.03	<0.02	0.0013
W21R-4864	36549	160	170	WASTE	FALSE	Phonolite	<0.6	36.5	#N/A	36.5	8.42	0.04	0.03	<0.02	0.0013
W21R-4864	36553	180	190	WASTE	FALSE	Phonolite	<0.6	14.7	#N/A	14.7	8.29	0.03	0.03	<0.02	0.0037
W21R-4864	36553	180	190	WASTE	FALSE	Phonolite	<0.6	14.7	#N/A	14.7	8.29	0.03	0.03	<0.02	0.0037
W21R-4864	36554	190	200	WASTE	FALSE	Phonolite	<0.6	5.5	#N/A	5.5	7.51	0.02	0.03	<0.02	0.002
W21R-4864	36554	190	200	WASTE	FALSE	Phonolite	<0.6	5.5	#N/A	5.5	7.51	0.02	0.03	<0.02	0.002
W21R-4864	36555	200	210	WASTE	FALSE	Phonolite	<0.6	4.0	#N/A	4.0	7.52	0.02	0.02	<0.02	0.005
W21R-4864	36555	200	210	WASTE	FALSE	Phonolite	<0.6	4.0	#N/A	4.0	7.52	0.02	0.02	<0.02	0.005
W21R-4866	36654	10	20	WASTE	FALSE	Phonolite	<0.6	3.0	#N/A	3.0	7.16	0.02	0.01	<0.02	0.0003
W21R-4866	36658	50	60	WASTE	FALSE	Phonolite	0.6	32.2	53.7	31.6	8.05	0.04	0.02	0.02	0.0003
W21R-4867	36747	0	10	WASTE	FALSE	Phonolite	0.6	6.3	10.5	5.7	7.15	0.03	0.01	0.02	0.00005
W21R-4867	36747	0	10	WASTE	FALSE	Phonolite	0.6	6.3	10.5	5.7	7.15	0.03	0.01	0.02	0.00005
W21R-4867	36751	40	50	WASTE	FALSE	Phonolite	<0.6	6.5	#N/A	6.5	7.40	<0.02	0.01	<0.02	0.0001
W21R-4867	36751	40	50	WASTE	FALSE	Phonolite	<0.6	6.5	#N/A	6.5	7.40	<0.02	0.01	<0.02	0.0001
W21R-4868	36827	30	40	WASTE	FALSE	Phonolite	<0.6	0.7	#N/A	0.7	7.32	<0.02	<0.01	<0.02	0.0008
W21R-4871	37102	10	20	WASTE	TRUE	Phonolite	<0.6	46.7	#N/A	46.7	8.79	<0.02	0.01	<0.02	0.0002
W21R-4871	37106	50	60	WASTE	TRUE	Phonolite	0.6	45.7	76.2	45.1	9.11	0.03	0.01	0.02	0.00005
W21R-4871	37110	90	100	WASTE	TRUE	Phonolite	1.3	38.0	29.2	36.7	9.48	0.07	0.03	0.04	0.00005
W21R-4871	37114	130	140	WASTE	TRUE	Phonolite	0.9	46.5	51.7	45.6	9.51	0.06	0.03	0.03	0.0001
W21R-4873	37284	30	40	WASTE	TRUE	Phonolite	<0.6	48.0	#N/A	48.0	9.39	0.10	0.09	<0.02	0.0002
W21R-4873	37288	70	80	WASTE	TRUE	Phonolite	0.6	39.8	66.3	39.2	8.65	0.08	0.06	0.02	0.00005
W21R-4873	37292	110	120	WASTE	TRUE	Phonolite	<0.6	30.2	#N/A	30.2	8.42	0.03	0.04	<0.02	0.00005
W21R-4876	37460	0	10	WASTE	TRUE	Phonolite	<0.6	39.6	#N/A	39.6	8.74	0.02	0.02	<0.02	0.0003
W21R-4876	37464	40	50	WASTE	TRUE	Phonolite	<0.6	24.9	#N/A	24.9	8.43	<0.02	0.01	<0.02	0.0002
W21R-4876	37468	80	90	WASTE	TRUE	Phonolite	<0.6	18.7	#N/A	18.7	8.21	<0.02	0.01	<0.02	0.0002
W21R-4876	37472	120	130	WASTE	TRUE	Phonolite	1.3	34.3	26.4	33.0	9.00	0.07	0.03	0.04	0.00005
W21R-4877	37491	10	20	WASTE	TRUE	Phonolite	<0.6	9.8	#N/A	9.8	7.70	0.02	0.02	<0.02	0.0001
W21R-4877	37495	50	60	WASTE	TRUE	Phonolite	<0.6	1.7	#N/A	1.7	7.06	<0.02	0.01	<0.02	0.00005
W21R-4877	37499	90	100	WASTE	TRUE	Phonolite	<0.6	1.7	#N/A	1.7	7.54	<0.02	0.02	<0.02	0.0001
W21R-4882	37749	10	20	WASTE	TRUE	Phonolite	<0.6	2.0	#N/A	2.0	7.58	0.19	0.19	<0.02	0.0004
W21R-4882	37753	50	60	WASTE	TRUE	Phonolite	<0.6	0.7	#N/A	0.7	7.16	<0.02	0.01	<0.02	0.0004
W21R-4883	37785	10	20	WASTE	FALSE	Phonolite	<0.6	5.0	#N/A	5.0	7.48	<0.02	<0.01	<0.02	0.00005



Table D–6B. Acid Base Accounting for Phonolite Porphyry (Current Data) (Page 6 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4883	37789	50	60	WASTE	FALSE	Phonolite	<0.6	15.8	#N/A	15.8	7.82	<0.02	0.01	<0.02	0.00005
W21R-4884	37853	20	30	WASTE	TRUE	Phonolite	<0.6	39.3	#N/A	39.3	8.62	0.13	0.15	<0.02	0.0002
W21R-4884	37857	60	70	WASTE	TRUE	Phonolite	<0.6	38.5	#N/A	38.5	8.43	0.08	0.12	<0.02	0.00005
W21R-4884	37861	100	110	WASTE	TRUE	Phonolite	<0.6	42.7	#N/A	42.7	8.49	0.07	0.08	<0.02	0.00005
W21R-4884	37865	140	150	WASTE	TRUE	Phonolite	<0.6	6.6	#N/A	6.6	7.77	<0.02	0.01	<0.02	0.00005
W21R-4884	37871	180	190	WASTE	TRUE	Phonolite	<0.6	4.7	#N/A	4.7	7.97	0.06	0.05	<0.02	0.0099
W21R-4885	37940	20	30	WASTE	TRUE	Phonolite	0.6	19.8	33.0	19.2	8.23	0.05	0.03	0.02	0.0024
W21R-4885	37944	60	70	WASTE	TRUE	Phonolite	<0.6	28.5	#N/A	28.5	8.09	0.06	0.06	<0.02	0.0002
W21R-4885	37948	100	110	WASTE	TRUE	Phonolite	<0.6	28.9	#N/A	28.9	7.65	0.04	0.03	<0.02	0.0001
W21R-4885	37952	140	150	WASTE	TRUE	Phonolite	<0.6	2.0	#N/A	2.0	7.69	<0.02	<0.01	<0.02	0.0002
W21R-4885	37953	150	160	WASTE	TRUE	Phonolite	4.1	93.5	22.8	89.4	8.64	0.14	0.01	0.13	0.00005
W21R-4885	37958	180	190	WASTE	TRUE	Phonolite	<0.6	2.0	#N/A	2.0	7.65	<0.02	<0.01	<0.02	0.00005
W21R-4886	37978	30	40	WASTE	TRUE	Phonolite	<0.6	24.0	#N/A	24.0	8.26	0.05	0.11	<0.02	0.00005
W21R-4886	37978	30	40	WASTE	TRUE	Phonolite	<0.6	24.0	#N/A	24.0	8.26	0.05	0.11	<0.02	0.00005
W21R-4887	38082	10	20	WASTE	TRUE	Phonolite	<0.6	36.6	#N/A	36.6	8.22	0.02	0.02	<0.02	0.00005
W21R-4888	38168	20	30	WASTE	TRUE	Phonolite	0.9	6.0	6.7	5.1	7.65	0.04	0.01	0.03	0.0001
W21R-4891	38270	0	10	WASTE	FALSE	Phonolite	<0.6	42.9	#N/A	42.9	8.39	0.05	0.04	<0.02	0.00005
W21R-4891	38274	40	50	WASTE	FALSE	Phonolite	<0.6	47.3	#N/A	47.3	8.61	0.04	0.06	<0.02	0.00005
W21R-4891	38278	80	90	WASTE	FALSE	Phonolite	<0.6	44.2	#N/A	44.2	8.57	<0.02	0.06	<0.02	0.00005
W21R-4891	38282	120	130	WASTE	FALSE	Phonolite	<0.6	26.4	#N/A	26.4	8.14	<0.02	0.05	<0.02	0.00005
W21R-4891	38286	160	170	WASTE	FALSE	Phonolite	<0.6	39.3	#N/A	39.3	8.53	0.06	0.06	<0.02	0.00005
W21R-4892	38365	10	20	WASTE	FALSE	Phonolite	<0.6	28.9	#N/A	28.9	8.38	0.03	0.03	<0.02	0.00005
W21R-4892	38369	50	60	WASTE	FALSE	Phonolite	<0.6	42.5	#N/A	42.5	8.95	0.03	0.07	<0.02	0.0002
W21R-4892	38373	90	100	WASTE	FALSE	Phonolite	<0.6	48.8	#N/A	48.8	8.69	<0.02	0.04	<0.02	0.0005
W21R-4892	38377	130	140	WASTE	FALSE	Phonolite	<0.6	49.8	#N/A	49.8	8.60	0.04	0.05	<0.02	0.00005
W21R-4893	38455	20	30	WASTE	FALSE	Phonolite	<0.6	42.7	#N/A	42.7	9.06	<0.02	0.02	<0.02	0.00005
W21R-4893	38459	60	70	WASTE	FALSE	Phonolite	<0.6	48.8	#N/A	48.8	8.92	<0.02	0.01	<0.02	0.00005
W21R-4893	38463	100	110	WASTE	FALSE	Phonolite	<0.6	50.0	#N/A	50.0	9.09	<0.02	0.03	<0.02	0.0002
W21R-4893	38467	140	150	WASTE	FALSE	Phonolite	<0.6	49.5	#N/A	49.5	8.70	0.04	0.04	<0.02	0.00005
W21R-4894	38550	30	40	WASTE	FALSE	Phonolite	<0.6	24.8	#N/A	24.8	8.20	<0.02	0.03	<0.02	0.0006
W21R-4894	38550	30	40	WASTE	FALSE	Phonolite	<0.6	24.8	#N/A	24.8	8.20	<0.02	0.03	<0.02	0.0006
W21R-4894	38554	70	80	WASTE	FALSE	Phonolite	<0.6	47.2	#N/A	47.2	8.67	0.02	0.06	<0.02	0.0001
W21R-4894	38554	70	80	WASTE	FALSE	Phonolite	<0.6	47.2	#N/A	47.2	8.67	0.02	0.06	<0.02	0.0001
W21R-4894	38558	110	120	WASTE	FALSE	Phonolite	0.6	42.8	71.3	42.2	8.66	0.07	0.05	0.02	0.00005



Table D–6B. Acid Base Accounting for Phonolite Porphyry (Current Data) (Page 7 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4894	38558	110	120	WASTE	FALSE	Phonolite	0.6	42.8	71.3	42.2	8.66	0.07	0.05	0.02	0.00005
W21R-4894	38562	150	160	WASTE	FALSE	Phonolite	<0.6	40.8	#N/A	40.8	8.33	0.03	0.06	<0.02	0.0001
W21R-4894	38562	150	160	WASTE	FALSE	Phonolite	<0.6	40.8	#N/A	40.8	8.33	0.03	0.06	<0.02	0.0001
W21R-4896	38697	0	10	WASTE	FALSE	Phonolite	<0.6	23.4	#N/A	23.4	7.46	0.03	0.03	<0.02	0.0001
W21R-4896	38701	40	50	WASTE	FALSE	Phonolite	<0.6	38.1	#N/A	38.1	8.34	0.02	0.02	<0.02	0.0002
W21R-4896	38705	80	90	WASTE	FALSE	Phonolite	0.9	30.6	34.0	29.7	8.68	0.05	0.02	0.03	0.00005
W21R-4897	38792	10	20	WASTE	FALSE	Phonolite	<0.6	5.9	#N/A	5.9	6.95	<0.02	0.01	<0.02	0
W21R-4897	38795	40	50	WASTE	FALSE	Phonolite	1.3	39.8	30.6	38.5	8.07	0.06	0.02	0.04	0
W21R-4897	38799	80	90	WASTE	FALSE	Phonolite	<0.6	13.5	#N/A	13.5	7.84	0.04	0.05	<0.02	0
W21R-4898	38887	20	30	WASTE	FALSE	Phonolite	0.6	42.1	70.2	41.5	7.84	0.04	0.02	0.02	0.0001
W21R-4898	38891	60	70	WASTE	FALSE	Phonolite	<0.6	44.4	#N/A	44.4	8.31	0.07	0.06	<0.02	0.00005
W21R-4900	39052	10	20	WASTE	FALSE	Phonolite	<0.6	25.0	#N/A	25.0	8.17	0.03	0.05	<0.02	0.0005
W21R-4900	39056	50	60	WASTE	FALSE	Phonolite	<0.6	35.9	#N/A	35.9	8.54	0.04	0.06	<0.02	0.0001
W21R-4900	39060	90	100	WASTE	FALSE	Phonolite	<0.6	39.6	#N/A	39.6	8.32	0.06	0.06	<0.02	0.0001
W21R-4900	39064	130	140	WASTE	FALSE	Phonolite	<0.6	37.1	#N/A	37.1	8.46	0.05	0.11	<0.02	0.0002
W21R-4901	39147	20	30	WASTE	FALSE	Phonolite	0.6	2.0	3.3	1.4	8.16	0.03	0.01	0.02	0.0023
W21R-4901	39151	60	70	WASTE	FALSE	Phonolite	<0.6	32.7	#N/A	32.7	8.93	0.04	0.03	<0.02	0.0003
W21R-4901	39155	100	110	WASTE	FALSE	Phonolite	<0.6	14.7	#N/A	14.7	8.35	<0.02	0.01	<0.02	0.00005
W21R-4902	39198	30	40	WASTE	FALSE	Phonolite	1.9	37.4	19.7	35.5	8.41	0.08	0.02	0.06	0.0001
W21R-4903	39289	0	10	WASTE	FALSE	Phonolite	<0.6	27.1	#N/A	27.1	9.15	<0.02	0.07	<0.02	0.00005
W21R-4903	39293	40	50	WASTE	FALSE	Phonolite	0.9	24.5	27.2	23.6	9.19	0.10	0.07	0.03	0.0002
W21R-4903	39298	90	100	WASTE	FALSE	Phonolite	<0.6	33.2	#N/A	33.2	8.25	0.03	0.07	<0.02	0.00005
W21R-4904	39330	0	10	WASTE	FALSE	Phonolite	<0.6	25.2	#N/A	25.2	8.07	0.03	0.05	<0.02	0.0001
W21R-4905	39373	10	20	WASTE	FALSE	Phonolite	<0.6	24.6	#N/A	24.6	9.35	0.03	0.13	<0.02	0.00005
W21R-4905	39377	50	60	WASTE	FALSE	Phonolite	<0.6	27.6	#N/A	27.6	9.38	0.09	0.10	<0.02	0.00005
W21R-4905	39381	90	100	WASTE	FALSE	Phonolite	<0.6	30.3	#N/A	30.3	8.90	0.09	0.11	<0.02	0.00005
W21R-4905	39385	130	140	WASTE	FALSE	Phonolite	<0.6	93.3	#N/A	93.3	7.98	0.03	0.04	<0.02	0.0056
W21R-4905	39407	330	340	WASTE	FALSE	Phonolite	1.3	63.4	48.8	62.1	8.78	0.05	0.01	0.04	0.00005
W21R-4907	39468	20	30	WASTE	FALSE	Phonolite	<0.6	21.6	#N/A	21.6	9.31	0.03	0.06	<0.02	0.00005
W21R-4907	39472	60	70	WASTE	FALSE	Phonolite	0.6	25.8	43.0	25.2	9.55	0.15	0.13	0.02	0.00005
W21R-4907	39476	100	110	WASTE	FALSE	Phonolite	0.9	30.6	34.0	29.7	9.07	0.11	0.08	0.03	0.00005
W21R-4907	39480	140	150	WASTE	FALSE	Phonolite	<0.6	70.5	#N/A	70.5	8.76	0.02	0.01	<0.02	0.0016
W21R-4908	39553	0	10	WASTE	FALSE	Phonolite	<0.6	32.7	#N/A	32.7	7.99	0.02	0.07	<0.02	0.00005
W21R-4908	39557	40	50	WASTE	FALSE	Phonolite	<0.6	34.3	#N/A	34.3	8.97	0.02	0.05	<0.02	0.0004

Table D–6B. Acid Base Accounting for Phonolite Porphyry (Current Data) (Page 8 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4908	39561	80	90	WASTE	FALSE	Phonolite	<0.6	23.3	#N/A	23.3	9.63	0.07	0.06	<0.02	0.00005
W21R-4909	39648	10	20	WASTE	FALSE	Phonolite	<0.6	6.4	#N/A	6.4	8.09	0.02	0.02	<0.02	0.0018
W21R-4909	39652	50	60	WASTE	FALSE	Phonolite	<0.6	47.7	#N/A	47.7	8.60	0.02	0.03	<0.02	0.0002
W21R-4909	39656	90	100	WASTE	FALSE	Phonolite	<0.6	37.7	#N/A	37.7	8.52	0.05	0.06	<0.02	0.0002
W21R-4909	39666	170	180	WASTE	FALSE	Phonolite	<0.6	8.6	#N/A	8.6	8.27	0.02	0.02	<0.02	0.0076
W21R-4911	39835	0	10	WASTE	FALSE	Phonolite	<0.6	12.0	#N/A	12.0	6.76	<0.02	0.01	<0.02	0.00005
W21R-4911	39839	40	50	WASTE	FALSE	Phonolite	<0.6	41.7	#N/A	41.7	8.60	<0.02	0.04	<0.02	0.0007
W21R-4911	39843	80	90	WASTE	FALSE	Phonolite	<0.6	2.5	#N/A	2.5	8.65	0.06	0.06	<0.02	0.0002
W21R-4912	39930	10	20	WASTE	FALSE	Phonolite	<0.6	25.0	#N/A	25.0	7.72	<0.02	0.03	<0.02	0
W21R-4912	39934	50	60	WASTE	FALSE	Phonolite	<0.6	54.3	#N/A	54.3	8.84	0.03	0.03	<0.02	0
W21R-4912	39938	90	100	WASTE	FALSE	Phonolite	<0.6	46.5	#N/A	46.5	8.81	0.05	0.05	<0.02	0
W21R-4913	39979	20	30	WASTE	FALSE	Phonolite	<0.6	16.4	#N/A	16.4	8.02	0.02	0.07	<0.02	0.00005
W21R-4913	39983	60	70	WASTE	FALSE	Phonolite	<0.6	47.5	#N/A	47.5	8.80	0.05	0.05	<0.02	0.00005
W21R-4919	40497	0	10	WASTE	FALSE	Phonolite	<0.6	19.8	#N/A	19.8	7.49	0.02	0.08	<0.02	0.00005
W21R-4919	40501	40	50	WASTE	FALSE	Phonolite	<0.6	49.5	#N/A	49.5	8.57	0.07	0.11	<0.02	0.00005
W21R-4919	40505	80	90	WASTE	FALSE	Phonolite	<0.6	11.3	#N/A	11.3	8.33	<0.02	0.01	<0.02	0.0001

Table D-7A. Acid Base Accounting for Fill (Historical Data) (Page 1 of 4)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3849	67271	0	10	WASTE	YES	Fill	1	121	121	119	8	0.04	—	—	0.03	—	0.009
FX3849	67275	40	50	WASTE	YES	Fill	2	203	101.5	201	8.7	0.06	—	0.02	0.02	0.02	—
FX3849	67276	50	60	WASTE	YES	Fill	—	132	132	132	8.6	0.02	0.02	—	—	—	—
FX3849	67284	130	140	WASTE	YES	Fill	3	22	7.3	19	8.6	0.15	0.05	—	0.1	—	—
FX3850	67301	0	10	WASTE	YES	Fill	—	149	149	148	7.8	0.02	—	—	—	—	0.008
FX3850	67304	30	40	WASTE	YES	Fill	2	121	60.5	119	8	0.06	—	—	0.06	—	—
FX3850	67305	40	50	WASTE	YES	Fill	1	107	107	106	8.5	0.04	—	—	0.01	0.03	—
FX3850	67306	50	60	ORE	YES	Fill	1	121	121	119	7.9	0.04	—	—	0.04	—	0.025
FX3850	67307	60	70	ORE	YES	Fill	1	14	14	13	8.6	0.05	—	—	0.04	—	0.015
FX3884	67401	100	110	WASTE	YES	Fill	2	87	0	85	8.2	0.06	—	—	0.06	—	—
FX3884	67403	120	130	WASTE	YES	Fill	1	87	0	86	8.3	0.04	—	—	0.03	—	—
FX3886	67431	0	10	WASTE	YES	Fill	—	163	163	162	8.3	0.02	—	—	0.02	—	—
FX3886	67433	20	30	WASTE	YES	Fill	—	203	203	202	8.2	0.02	—	—	0.02	—	—
FX3886	67436	50	60	ORE	YES	Fill	—	209	209	208	8.3	0.04	0.01	0.01	0.02	—	0.021
FX3886	67438	70	80	WASTE	YES	Fill	1	160	160	159	8.3	0.06	0.02	—	0.04	—	—
FX3885	67471	0	10	WASTE	YES	Fill	—	199	0	198	8	0.02	—	0.02	—	—	—
FX3885	67472	10	20	WASTE	YES	Fill	1	257	0	256	8.1	0.05	0.01	—	0.03	0.01	—
FX3885	67473	20	30	ORE	YES	Fill	1	252	0	251	8.3	0.04	0.01	—	0.03	—	0.011
FX3897	68081	100	110	ORE	YES	Fill	—	108	108	108	8.5	0.02	—	—	0.02	—	0.013
FX3897	68085	140	150	ORE	YES	Fill	—	233	233	232	8.5	0.04	—	0.01	0.02	—	0.011
FX3887	68116	100	110	WASTE	YES	Fill	—	23	23	23	7.9	0.02	—	—	0.02	—	—
FX3903	68158	120	130	WASTE	YES	Fill	4	24	6	20	8	0.12	0.01	0.02	0.1	—	—
FX3903	68162	160	170	WASTE	YES	Fill	1	49	49	47	9.1	0.05	—	—	0.04	—	—
FX3890	68381	0	10	WASTE	YES	Fill	—	77	0	76	8.7	0.04	—	—	0.03	—	0.009
FX3890	68385	40	50	WASTE	YES	Fill	—	48	0	47	8.2	0.04	—	—	0.03	—	0.009
FX3896	68494	180	190	WASTE	YES	Fill	—	7	7	7	8.6	0.02	—	—	0.01	—	—
FX3900	68518	20	30	WASTE	YES	Fill	1	11	11	10	7.7	0.05	—	—	0.04	—	—
FX3900	68521	50	60	ORE	YES	Fill	—	27	27	27	8.3	0.01	—	—	—	—	0.012
FX3891	68572	110	120	WASTE	YES	Fill	2	67	33.5	66	8.7	0.06	—	—	0.05	—	—
FX3893	68607	40	50	WASTE	YES	Fill	—	17	17	17	8.2	0.02	—	—	—	—	—
FX3893	68615	120	130	ORE	YES	Fill	2	38	19	36	8.7	0.07	—	—	0.05	0.01	0.157
FX3894	68652	40	50	WASTE	YES	Fill	—	13	13	13	8.5	0.02	0.01	—	0.01	—	—
FX3894	68656	80	90	WASTE	YES	Fill	—	30	30	29	9	0.04	—	0.01	0.02	—	—
FX3910	68753	90	100	WASTE	YES	Fill	—	25	25	24	7.9	0.02	—	—	0.02	—	—

Table D-7A. Acid Base Accounting for Fill (Historical Data) (Page 2 of 4)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3915	68789	0	10	WASTE	YES	Fill	—	132	132	132	8.6	0.02	—	—	0.02	—	—
FX3905	68840	10	20	WASTE	YES	Fill	—	13	13	12	8	0.02	—	—	0.01	—	—
FX3905	68845	60	70	WASTE	YES	Fill	—	14	14	13	9	0.04	0.01	0.01	0.02	—	0.01
FX3905	68849	100	110	ORE	YES	Fill	2	10	5	8	8.2	0.08	—	0.01	0.03	0.03	0.014
FX3905	68853	140	150	ORE	YES	Fill	1	24	24	23	8.8	0.04	—	0.01	0.02	0.01	0.016
FX3905	68856	170	180	WASTE	YES	Fill	—	331	331	331	8.4	0.01	—	—	—	—	—
FX3924	69032	40	50	WASTE	YES	Fill	—	53	53	53	8.2	0.02	—	—	0.01	—	0.009
FX3924	69036	80	90	WASTE	YES	Fill	2	21	10.5	19	8.7	0.06	0.01	—	0.04	0.01	—
FX3924	69040	120	130	WASTE	YES	Fill	—	17	17	16	9.1	0.04	—	0.01	0.02	—	0.008
FX3924	69043	150	160	WASTE	YES	Fill	1	28	28	26	9.3	0.04	—	—	0.03	—	—
FX3924	69047	190	200	WASTE	YES	Fill	—	157	157	157	8.9	0.02	—	—	0.01	—	—
FX3911	69096	130	140	WASTE	YES	Fill	1	16	16	15	8.6	0.04	—	—	0.02	0.01	—
FX3909	69128	0	10	WASTE	YES	Fill	—	39	39	38	8.4	0.02	—	—	0.02	—	0.01
FX3909	69133	50	60	WASTE	YES	Fill	—	17	17	16	8.1	0.02	—	—	0.01	—	—
FX3909	69136	80	90	ORE	YES	Fill	1	8	8	7	8.8	0.06	0.01	—	0.03	0.01	0.011
FX3909	69137	90	100	WASTE	YES	Fill	1	14	14	12	9.1	0.06	0.01	—	0.02	0.02	—
FX3909	69140	120	130	WASTE	YES	Fill	1	31	31	30	8.6	0.04	—	0.02	0.02	—	—
FX3909	69145	170	180	WASTE	YES	Fill	—	92	92	92	8.7	0.01	—	0.01	—	—	—
FX3912	69183	50	60	WASTE	YES	Fill	2	15	7.5	13	8.7	0.06	—	—	0.04	0.01	—
FX3912	69187	90	100	ORE	YES	Fill	—	41	41	40	8.9	0.03	—	0.01	—	0.02	0.027
FX3913	69238	100	110	WASTE	YES	Fill	—	269	269	268	8.7	0.01	—	0.01	—	—	—
FX3913	69242	140	150	WASTE	YES	Fill	—	50	50	50	8.6	0.01	—	—	0.01	—	—
FX3928	69373	90	100	ORE	YES	Fill	—	33	33	32	8.3	0.04	0.02	—	0.02	—	0.012
FX3917	69416	70	80	ORE	YES	Fill	—	142	142	141	8.5	0.02	—	—	0.02	—	0.019
FX3917	69420	110	120	WASTE	YES	Fill	1	37	37	36	8.2	0.05	—	—	0.04	—	0.008
FX3918	69464	50	60	ORE	YES	Fill	—	109	109	109	9.1	0.02	—	—	0.01	—	0.02
FX3914	69520	110	120	WASTE	YES	Fill	—	26	26	26	8.7	0.02	—	—	0.01	—	—
FX3920	69567	80	90	WASTE	YES	Fill	—	115	115	114	8.4	0.04	—	—	0.03	—	—
FX3920	69571	120	130	ORE	YES	Fill	4	19	4.8	15	8.6	0.14	0.02	—	0.1	0.02	0.012
FX3921	69617	80	90	ORE	YES	Fill	—	28	28	28	8	0.02	—	—	0.01	—	0.012
FX3921	69622	130	140	WASTE	YES	Fill	—	59	59	58	8.7	0.02	—	0.01	—	—	0.009
FX3919	69718	90	100	WASTE	YES	Fill	—	93	93	93	8	—	—	—	—	—	—
FX3919	69725	160	170	WASTE	YES	Fill	1	308	308	307	8.4	0.04	—	0.02	0.02	-	-
FX3919	69728	190	200	WASTE	YES	Fill	—	184	184	184	8.7	—	—	—	—	—	—



Table D-7A. Acid Base Accounting for Fill (Historical Data) (Page 3 of 4)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3925	69757	0	10	WASTE	YES	Fill	—	178	178	177	8.5	0.01	—	0.01	—	—	—
FX3925	69768	110	120	WASTE	YES	Fill	—	20	20	20	8.6	0.02	—	—	0.01	—	—
FX3925	69772	150	160	WASTE	YES	Fill	—	294	294	294	8.5	0.01	—	—	—	—	—
FX3925	69776	190	200	WASTE	YES	Fill	—	186	186	186	8.6	0.01	—	—	—	—	—
FX3923	69910	80	90	WASTE	YES	Fill	2	176	88	175	8.1	0.05	—	—	0.02	0.03	—
FX3929	69996	90	100	WASTE	YES	Fill	2	7	3.5	5	8	0.07	—	0.02	0.04	0.01	—
FX3933	70134	100	110	ORE	YES	Fill	—	38	38	38	8.2	0.01	—	0.01	—	—	0.067
FX3931	70217	0	10	WASTE	YES	Fill	1	126	126	125	8.4	0.06	0.02	—	0.02	0.02	—
FX4410	83338	30	40	WASTE	YES	Fill	1	37		36	0	0.05				0.04	—
FX4410	83342	70	80	WASTE	YES	Fill		65		65	0	0.02				0.02	—
FX4409	83384	30	40	WASTE	YES	Fill	0	57		56	0	0.03	0	0	0	0.03	—
FX4415	83430	30	40	WASTE	YES	Fill	2	9		7	0	0.07	0.01		0.02	0.04	—
FX4415	83434	70	80	WASTE	YES	Fill		284		283	0	0.03			0.01	0.02	—
FX4414	83476	30	40	WASTE	YES	Fill		39		38	0	0.03				0.03	—
FX4412	83525	30	40	WASTE	YES	Fill	2	72		70	0	0.08			0.04	0.04	—
FX4413	83570	30	40	WASTE	YES	Fill		176		175	0	0.02				0.02	—
FX4461	83676	30	40	WASTE	YES	Fill	1	34		33	0	0.03				0.03	—
FX4458	83724	30	40	WASTE	YES	Fill		86		86	0	0.03				0.03	—
FX4431	83782	190	200	WASTE	YES	Fill	1	31		30	0	0.05			0.02	0.03	—
FX4416	83875	30	40	WASTE	YES	Fill		224		224	0	0.02				0.02	—
FX4418	83922	30	40	WASTE	YES	Fill		146		145	0	0.03				0.03	—
FX4419	83968	30	40	WASTE	YES	Fill		69		69	0	0.02				0.02	—
FX4420	84015	30	40	WASTE	YES	Fill	1	47		46	0	0.05	0.01			0.04	—
FX4420	84018	60	70	WASTE	YES	Fill		178		178	0	0.03				0.03	—
FX4421	84062	30	40	WASTE	YES	Fill	2	30		28	0	0.07			0.02	0.04	—
FX4421	84066	70	80	WASTE	YES	Fill		165		164	0	0.03				0.03	—
FX4423	84162	30	40	WASTE	YES	Fill	1	79		77	0	0.05			0.01	0.04	—
FX4423	84166	70	80	WASTE	YES	Fill	3	30		27	0	0.1			0.06	0.04	—
FX4423	84170	110	120	WASTE	YES	Fill	2	41		39	0	0.06			0.02	0.04	—
FX4423	84175	160	170	WASTE	YES	Fill	3	30		27	0	0.09			0.05	0.04	—
FX4417	84318	30	40	WASTE	YES	Fill	1	18		17	0	0.06	0.02			0.04	—
FX4425	84364	30	40	WASTE	YES	Fill	6	99		93	0	0.19			0.15	0.04	—
FX4425	84368	70	80	WASTE	YES	Fill	1	58		57	0	0.04				0.04	—

Table D-7A. Acid Base Accounting for Fill (Historical Data) (Page 4 of 4)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX4422	84571	30	40	WASTE	YES	Fill	2	34		33	0	0.08	0.02		0.02	0.04	—
FX4422	84575	70	80	WASTE	YES	Fill	1	53		52	0	0.04				0.04	—
FX4422	84579	110	120	WASTE	YES	Fill	2	17		15	0	0.06			0.01	0.04	—
FX4422	84584	160	170	WASTE	YES	Fill	5	230		225	0	0.16		0.04	0.08	0.03	—
FX4424	84622	30	40	WASTE	YES	Fill	1	32		30	0	0.05				0.03	—
FX4462	85938	30	40	WASTE	YES	Fill	1	17		15	0	0.04			0.01	0.03	—
FX4460	86143	30	40	WASTE	YES	Fill		2		1	0	0.03				0.03	—

Table D-7B. Acid Base Accounting for Fill (Current Data) (Page 1 of 1)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4878	37518	20	30	WASTE	TRUE	Fill	<0.6	17.0	#N/A	17.0	8.25	0.19	0.21	<0.02	0.0081
W21R-4879	37591	30	40	WASTE	TRUE	Fill	<0.6	206.0	#N/A	206.0	8.63	0.02	0.02	<0.02	0.002
W21R-4880	37655	0	10	ORE	TRUE	Fill	<0.6	14.0	#N/A	14.0	8.25	0.08	0.08	<0.02	0.0138
W21R-4880	37658	30	40	WASTE	TRUE	Fill	0.6	26.4	44.0	25.8	8.48	0.07	0.05	0.02	0.0085
W21R-4880	37662	70	80	WASTE	TRUE	Fill	<0.6	241.0	#N/A	241.0	8.61	<0.02	0.01	<0.02	0.0031
W21R-4880	37666	110	120	ORE	TRUE	Fill	<0.6	153.0	#N/A	153.0	8.48	0.08	0.07	<0.02	0.0149
W21R-4880	37670	150	160	WASTE	TRUE	Fill	<0.6	105.0	#N/A	105.0	8.36	0.34	0.35	<0.02	0.0095
W21R-4880	37677	200	210	WASTE	TRUE	Fill	0.6	74.3	123.8	73.7	8.38	0.08	0.06	0.02	0.0071
W21R-4890	38051	0	10	WASTE	TRUE	Fill	<0.6	176.0	#N/A	176.0	8.64	<0.02	0.01	<0.02	0.0025
W21R-4890	38055	40	50	WASTE	TRUE	Fill	<0.6	59.7	#N/A	59.7	8.36	0.03	0.03	<0.02	0.0094
W21R-4916	40252	10	20	WASTE	FALSE	Fill	<0.6	40.0	#N/A	40.0	8.77	0.02	0.02	<0.02	0.0003

Table D-8. Acid Base Accounting for Trachyte (Current Data) (Page 1 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4748	28142	0	10	WASTE	FALSE	Trachyte	<0.6	0.7	#N/A	0.7	7.44	0.09	0.11	<0.02	0.006
W21R-4748	28143	10	20	WASTE	FALSE	Trachyte	<0.6	0	#N/A	0	8.49	0.05	0.05	<0.02	0.007
W21R-4748	28144	20	30	WASTE	FALSE	Trachyte	<0.6	0.2	#N/A	0.2	7.62	0.35	0.39	<0.02	0.008
W21R-4748	28145	30	40	WASTE	FALSE	Trachyte	<0.6	0	#N/A	0	7.2	0.51	0.57	<0.02	0.009
W21R-4748	28146	40	50	WASTE	FALSE	Trachyte	1.3	0.3	0.2	-1	7.43	0.41	0.37	0.04	0.007
W21R-4748	28147	50	60	WASTE	FALSE	Trachyte	0.6	0.2	0.3	-0.4	7.6	0.32	0.3	0.02	0.005
W21R-4748	28148	60	70	WASTE	FALSE	Trachyte	<0.6	0	#N/A	0	7.24	0.45	0.45	<0.02	0.004
W21R-4748	28149	70	80	WASTE	FALSE	Trachyte	<0.6	0	#N/A	0	7.34	0.38	0.4	<0.02	0.002
W21R-4748	28150	80	90	WASTE	FALSE	Trachyte	6.9	0.3	<0.1	-6.6	6.79	1.13	0.91	0.22	0.003
W21R-4748	28151	90	100	WASTE	FALSE	Trachyte	7.8	0	#N/A	-7.8	6.86	0.97	0.72	0.25	0.002
W21R-4748	28152	100	110	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	7.63	0.32	0.34	<0.02	0.001
W21R-4748	28153	110	120	WASTE	FALSE	Trachyte	<0.6	0	#N/A	0	7.72	0.18	0.2	<0.02	0.002
W21R-4748	28154	120	130	WASTE	FALSE	Trachyte	<0.6	0.2	#N/A	0.2	7.44	0.3	0.29	<0.02	—
W21R-4748	28155	130	140	WASTE	FALSE	Trachyte	<0.6	0	#N/A	0	7.77	0.18	0.19	<0.02	—
W21R-4749	28226	0	10	WASTE	FALSE	Trachyte	1.3	0.3	0.230769231	-1	6.98	0.33	0.29	0.04	0.01
W21R-4749	28227	10	20	WASTE	FALSE	Trachyte	1.3	0.5	0.384615385	-0.8	7.44	0.46	0.42	0.04	0.007
W21R-4749	28228	20	30	WASTE	FALSE	Trachyte	1.9	0.5	0.3	-1.4	8.02	0.43	0.37	0.06	—
W21R-4749	28229	30	40	WASTE	FALSE	Trachyte	3.1	0.3	<0.1	-2.8	8.28	0.34	0.24	0.1	—
W21R-4749	28230	40	50	WASTE	FALSE	Trachyte	1.3	1	0.8	-0.3	8.12	0.18	0.14	0.04	—
W21R-4749	28231	50	60	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	8.15	0.32	0.32	<0.02	—
W21R-4749	28232	60	70	WASTE	FALSE	Trachyte	1.3	0	#N/A	-1.3	7.6	0.43	0.39	0.04	0.004
W21R-4749	28233	70	80	WASTE	FALSE	Trachyte	<0.6	0.3	#N/A	0.3	7.69	0.29	0.28	<0.02	0.003
W21R-4749	28234	80	90	WASTE	FALSE	Trachyte	0.9	0	#N/A	-0.9	7.56	0.34	0.31	0.03	—
W21R-4749	28235	90	100	WASTE	FALSE	Trachyte	0.9	0.5	0.6	-0.4	7.94	0.36	0.33	0.03	—
W21R-4749	28236	100	110	WASTE	FALSE	Trachyte	0.6	0.8	1.3	0.2	7.59	0.39	0.37	0.02	—
W21R-4749	28237	110	120	WASTE	FALSE	Trachyte	2.8	0	#N/A	-2.8	7.55	0.49	0.4	0.09	—
W21R-4749	28238	120	130	WASTE	FALSE	Trachyte	<0.6	1.2	#N/A	1.2	7.75	0.26	0.26	<0.02	—
W21R-4749	28239	130	140	WASTE	FALSE	Trachyte	4.7	0.5	0.1	-4.2	7.86	0.35	0.2	0.15	0.007
W21R-4749	28240	140	150	WASTE	FALSE	Trachyte	6.6	0.5	<0.1	-6.1	7.66	0.41	0.2	0.21	0.006
W21R-4749	28241	150	160	WASTE	FALSE	Trachyte	4.4	0.2	<0.1	-4.2	7.78	0.28	0.14	0.14	0.01
W21R-4750	28315	0	10	WASTE	FALSE	Trachyte	<0.6	1.2	#N/A	1.2	7.66	0.09	0.1	<0.02	0.002
W21R-4750	28316	10	20	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	7.48	0.19	0.21	<0.02	—
W21R-4750	28317	20	30	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.04	0.16	0.19	<0.02	—

Table D-8. Acid Base Accounting for Trachyte (Current Data) (Page 2 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4750	28318	30	40	WASTE	FALSE	Trachyte	<0.6	1.2	#N/A	1.2	8.14	0.15	0.18	<0.02	—
W21R-4750	28319	40	50	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	8.04	0.12	0.15	<0.02	—
W21R-4750	28320	50	60	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	7.89	0.12	0.16	<0.02	—
W21R-4750	28321	60	70	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	7.79	0.12	0.12	<0.02	—
W21R-4750	28322	70	80	WASTE	FALSE	Trachyte	<0.6	1.2	#N/A	1.2	7.67	0.12	0.15	<0.02	—
W21R-4750	28323	80	90	WASTE	FALSE	Trachyte	<0.6	0.7	#N/A	0.7	8.29	0.15	0.16	<0.02	—
W21R-4750	28324	90	100	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	8.08	0.15	0.2	<0.02	—
W21R-4750	28325	100	110	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.56	0.1	0.13	<0.02	—
W21R-4750	28326	110	120	WASTE	FALSE	Trachyte	<0.6	0.7	#N/A	0.7	8.96	0.05	0.06	<0.02	—
W21R-4750	28327	120	130	WASTE	FALSE	Trachyte	<0.6	1.2	#N/A	1.2	8.87	0.06	0.07	<0.02	—
W21R-4750	28328	130	140	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.57	0.1	0.1	<0.02	—
W21R-4750	28329	140	150	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.39	0.02	0.03	<0.02	—
W21R-4750	28330	150	160	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	8.79	<0.02	0.01	<0.02	—
W21R-4750	28331	160	170	WASTE	FALSE	Trachyte	<0.6	1.5	#N/A	1.5	8.52	<0.02	0.01	<0.02	—
W21R-4751	28390			WASTE	FALSE	Trachyte	<0.6	1.2	#N/A	1.2	8.39	0.02	0.02	<0.02	—
W21R-4751	28394			WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	8.11	<0.02	0.01	<0.02	—
W21R-4757	28794	10	20	WASTE	FALSE	Trachyte	<0.6	2	#N/A	2	6.7	0.04	0.03	<0.02	—
W21R-4779	30579	0	10	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	7.6	0.06	0.09	<0.02	—
W21R-4779	30580	10	20	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.23	0.03	0.04	<0.02	—
W21R-4779	30581	20	30	WASTE	FALSE	Trachyte	<0.6	0.3	#N/A	0.3	8.25	0.08	0.12	<0.02	—
W21R-4779	30582	30	40	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.27	0.12	0.15	<0.02	—
W21R-4779	30583	40	50	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	8.29	0.08	0.09	<0.02	0.001
W21R-4779	30584	50	60	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.31	0.1	0.14	<0.02	—
W21R-4779	30585	60	70	WASTE	FALSE	Trachyte	<0.6	1.5	#N/A	1.5	8.28	0.09	0.13	<0.02	—
W21R-4779	30586	70	80	WASTE	FALSE	Trachyte	<0.6	1.8	#N/A	1.8	8.41	0.07	0.1	<0.02	—
W21R-4779	30587	80	90	WASTE	FALSE	Trachyte	<0.6	2	#N/A	2	8.39	<0.02	0.02	<0.02	—
W21R-4779	30588	90	100	WASTE	FALSE	Trachyte	<0.6	2	#N/A	2	8.35	<0.02	0.01	<0.02	—
W21R-4779	30589	100	110	WASTE	FALSE	Trachyte	<0.6	1.5	#N/A	1.5	8.32	0.02	0.02	<0.02	—
W21R-4779	30590	110	120	WASTE	FALSE	Trachyte	<0.6	1.2	#N/A	1.2	8.29	<0.02	0.02	<0.02	—
W21R-4779	30591	120	130	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.28	0.04	0.04	<0.02	—
W21R-4779	30592	130	140	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	8.31	0.02	0.03	<0.02	—
W21R-4779	30593	140	150	WASTE	FALSE	Trachyte	<0.6	1.8	#N/A	1.8	8.25	<0.02	0.01	<0.02	—
W21R-4779	30594	150	160	WASTE	FALSE	Trachyte	<0.6	1.7	#N/A	1.7	8.21	<0.02	0.01	<0.02	—

Table D-8. Acid Base Accounting for Trachyte (Current Data) (Page 3 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4779	30595	160	170	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.18	<0.02	0.01	<0.02	—
W21R-4780	30663	0	10	WASTE	FALSE	Trachyte	<0.6	0.3	#N/A	0.3	7.34	0.27	0.31	<0.02	0.004
W21R-4780	30664	10	20	WASTE	FALSE	Trachyte	0.6	1	1.7	0.4	7.38	0.32	0.3	0.02	0.007
W21R-4780	30665	20	30	WASTE	FALSE	Trachyte	1.875	1.2	0.64	-0.675	7.43	0.23	0.17	0.06	0.003
W21R-4780	30666	30	40	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	7.45	0.23	0.29	<0.02	0.003
W21R-4780	30667	40	50	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	7.38	0.23	0.29	<0.02	0.003
W21R-4780	30668	50	60	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	7.53	0.36	0.37	<0.02	0.001
W21R-4780	30669	60	70	WASTE	FALSE	Trachyte	<0.6	0.7	#N/A	0.7	7.48	0.11	0.18	<0.02	0.001
W21R-4780	30670	70	80	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	7.51	0.03	0.04	<0.02	—
W21R-4780	30671	80	90	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	7.65	0.05	0.05	<0.02	—
W21R-4780	30672	90	100	WASTE	TRUE	Trachyte	<0.6	0.7	#N/A	0.7	7.79	0.07	0.08	<0.02	0.002
W21R-4780	30673	100	110	WASTE	TRUE	Trachyte	3.4	0.8	0.2	-2.6	7.31	0.24	0.13	0.11	0.002
W21R-4781	30735	0	10	ORE	FALSE	Trachyte	3.4	0.3	<0.1	-3.1	7.36	0.49	0.38	0.11	0.011
W21R-4781	30736	10	20	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	7.72	0.34	0.39	<0.02	0.009
W21R-4781	30737	20	30	ORE	FALSE	Trachyte	<0.6	0.3	#N/A	0.3	7.89	0.2	0.19	<0.02	0.012
W21R-4781	30738	30	40	WASTE	TRUE	Trachyte	1.9	0	#N/A	-1.9	7.61	0.35	0.29	0.06	0.007
W21R-4781	30739	40	50	ORE	FALSE	Trachyte	3.1	0.3	<0.1	-2.8	7.25	0.42	0.32	0.1	0.012
W21R-4781	30740	50	60	ORE	FALSE	Trachyte	2.2	0	#N/A	-2.2	7.61	0.29	0.22	0.07	0.011
W21R-4781	30741	60	70	ORE	FALSE	Trachyte	<0.6	0	#N/A	0	7.28	0.31	0.32	<0.02	0.012
W21R-4781	30742	70	80	ORE	FALSE	Trachyte	1.3	-0.2	#N/A	-1.5	7.27	0.36	0.32	0.04	0.013
W21R-4781	30743	80	90	WASTE	FALSE	Trachyte	1.6	0	#N/A	-1.6	7.36	0.3	0.25	0.05	0.009
W21R-4781	30744	90	100	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	7.78	0.17	0.19	<0.02	0.007
W21R-4781	30745	100	110	WASTE	FALSE	Trachyte	3.4	0.5	0.1	-2.9	7.28	0.37	0.26	0.11	0.005
W21R-4781	30746	110	120	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	7.69	0.24	0.25	<0.02	0.009
W21R-4781	30747	120	130	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	7.81	0.17	0.18	<0.02	0.009
W21R-4781	30748	130	140	ORE	TRUE	Trachyte	0.9	0.2	0.2	-0.7	7.46	0.34	0.31	0.03	0.018
W21R-4781	30749	140	150	ORE	FALSE	Trachyte	1.3	0.3	0.2	-1	7.77	0.2	0.16	0.04	0.017
W21R-4783	30896	0	10	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	7.69	0.23	0.26	<0.02	0.002
W21R-4783	30897	10	20	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	7.87	0.29	0.29	<0.02	0.002
W21R-4783	30898	20	30	WASTE	FALSE	Trachyte	<0.6	1.5	#N/A	1.5	8.36	0.27	0.31	<0.02	—
W21R-4783	30899	30	40	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.26	0.15	0.18	<0.02	0.001
W21R-4783	30900	40	50	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.2	0.21	0.24	<0.02	—
W21R-4783	30901	50	60	WASTE	FALSE	Trachyte	0.9	1.3	1.4	0.4	8.13	0.28	0.25	0.03	—

Table D-8. Acid Base Accounting for Trachyte (Current Data) (Page 4 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4783	30902	60	70	WASTE	FALSE	Trachyte	1.3	0.5	0.4	-0.8	8.13	0.2	0.16	0.04	—
W21R-4783	30903	70	80	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	8.21	0.18	0.18	<0.02	—
W21R-4783	30904	80	90	WASTE	FALSE	Trachyte	1.9	0.5	0.3	-1.4	7.98	0.3	0.24	0.06	—
W21R-4783	30905	90	100	WASTE	FALSE	Trachyte	<0.6	1.7	#N/A	1.7	7.95	0.2	0.21	<0.02	—
W21R-4783	30906	100	110	WASTE	FALSE	Trachyte	<0.6	1.2	#N/A	1.2	8.11	0.09	0.08	<0.02	—
W21R-4783	30907	110	120	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	8.15	0.07	0.08	<0.02	—
W21R-4783	30908	120	130	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.17	0.09	0.08	<0.02	—
W21R-4783	30909	130	140	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	8.26	0.08	0.09	<0.02	0.001
W21R-4783	30910	140	150	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.41	0.06	0.05	<0.02	—
W21R-4783	30911	150	160	WASTE	FALSE	Trachyte	<0.6	1.5	#N/A	1.5	8.43	0.03	0.03	<0.02	0.004
W21R-4783	30912	160	170	WASTE	FALSE	Trachyte	<0.6	1.5	#N/A	1.5	7.81	0.09	0.08	<0.02	0.003
W21R-4783	30915	170	180	WASTE	TRUE	Trachyte	<0.6	1	#N/A	1	7.87	0.09	0.09	<0.02	—
W21R-4784	30980	0	10	WASTE	FALSE	Trachyte	<0.6	2.3	#N/A	2.3	7.96	0.2	0.22	<0.02	—
W21R-4784	30981	10	20	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	7.89	0.02	0.03	<0.02	0.001
W21R-4784	30982	20	30	WASTE	FALSE	Trachyte	<0.6	1.8	#N/A	1.8	8.28	<0.02	0.02	<0.02	—
W21R-4784	30983	30	40	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.31	<0.02	0.02	<0.02	—
W21R-4784	30984	40	50	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	7.81	0.04	0.04	<0.02	—
W21R-4784	30985	50	60	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.57	0.02	0.03	<0.02	—
W21R-4784	30986	60	70	WASTE	FALSE	Trachyte	<0.6	1.5	#N/A	1.5	8.59	<0.02	0.02	<0.02	—
W21R-4784	30987	70	80	WASTE	FALSE	Trachyte	<0.6	0.3	#N/A	0.3	8.32	0.02	0.04	<0.02	—
W21R-4784	30988	80	90	WASTE	FALSE	Trachyte	<0.6	0.7	#N/A	0.7	8.36	<0.02	0.03	<0.02	—
W21R-4784	30989	90	100	WASTE	TRUE	Trachyte	<0.6	0.8	#N/A	0.8	7.99	<0.02	0.02	<0.02	—
W21R-4784	30993	130	140	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	8.41	<0.02	0.01	<0.02	0.001
W21R-4784	30994	140	150	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.34	<0.02	0.01	<0.02	—
W21R-4784	30995	150	160	WASTE	FALSE	Trachyte	<0.6	1.8	#N/A	1.8	8.33	<0.02	0.01	<0.02	—
W21R-4784	30996	160	170	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	8.02	0.07	0.07	<0.02	0.001
W21R-4784	30999	170	180	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.24	0.04	0.05	<0.02	0.003
W21R-4784	31000	180	190	WASTE	FALSE	Trachyte	<0.6	1.2	#N/A	1.2	8.29	0.02	0.02	<0.02	0.003
W21R-4784	31001	190	200	WASTE	TRUE	Trachyte	<0.6	1.3	#N/A	1.3	8.18	0.02	0.01	<0.02	0.004
W21R-4785	31052	0	10	WASTE	FALSE	Trachyte	<0.6	0.3	#N/A	0.3	7.61	0.16	0.16	<0.02	0.003
W21R-4785	31053	10	20	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	7.96	0.13	0.18	<0.02	0.006
W21R-4785	31054	20	30	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	7.97	0.11	0.14	<0.02	0.006
W21R-4785	31055	30	40	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	7.88	0.11	0.14	<0.02	0.005

Table D-8. Acid Base Accounting for Trachyte (Current Data) (Page 5 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4785	31056	40	50	WASTE	FALSE	Trachyte	<0.6	2.3	#N/A	2.3	8.57	0.03	0.05	<0.02	0.003
W21R-4785	31057	50	60	WASTE	FALSE	Trachyte	<0.6	2	#N/A	2	8.6	<0.02	0.02	<0.02	0.003
W21R-4785	31058	60	70	WASTE	FALSE	Trachyte	<0.6	1.5	#N/A	1.5	8.5	<0.02	0.02	<0.02	0.002
W21R-4785	31059	70	80	WASTE	FALSE	Trachyte	<0.6	1.2	#N/A	1.2	8.55	0.02	0.03	<0.02	0.002
W21R-4785	31060	80	90	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	8.36	0.08	0.08	<0.02	0.005
W21R-4785	31061	90	100	WASTE	FALSE	Trachyte	<0.6	1.2	#N/A	1.2	8.27	0.04	0.04	<0.02	0.007
W21R-4786	31124	0	10	WASTE	TRUE	Trachyte	<0.6	1.3	#N/A	1.3	7.44	0.15	0.18	<0.02	0.004
W21R-4786	31125	10	20	WASTE	TRUE	Trachyte	<0.6	1	#N/A	1	7.9	0.18	0.21	<0.02	0.003
W21R-4786	31126	20	30	WASTE	FALSE	Trachyte	<0.6	1.5	#N/A	1.5	7.92	0.22	0.25	<0.02	0.005
W21R-4786	31127	30	40	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	7.73	0.17	0.2	<0.02	0.003
W21R-4786	31128	40	50	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	8.15	0.12	0.14	<0.02	0.003
W21R-4786	31129	50	60	WASTE	FALSE	Trachyte	<0.6	1.8	#N/A	1.8	8.44	0.04	0.06	<0.02	0.002
W21R-4786	31130	60	70	WASTE	FALSE	Trachyte	<0.6	1.5	#N/A	1.5	8.53	0.03	0.04	<0.02	0.002
W21R-4786	31131	70	80	WASTE	FALSE	Trachyte	<0.6	1.5	#N/A	1.5	8.53	0.03	0.03	<0.02	0.003
W21R-4786	31132	80	90	WASTE	TRUE	Trachyte	<0.6	1.3	#N/A	1.3	8.44	<0.02	0.03	<0.02	—
W21R-4786	31133	90	100	WASTE	FALSE	Trachyte	<0.6	2	#N/A	2	8.32	0.03	0.03	<0.02	0.002
W21R-4786	31134	100	110	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	8.47	<0.02	0.02	<0.02	0.002
W21R-4786	31135	110	120	WASTE	FALSE	Trachyte	<0.6	0.7	#N/A	0.7	7.91	0.08	0.09	<0.02	0.004
W21R-4787	31196	0	10	WASTE	FALSE	Trachyte	<0.6	3	#N/A	3	8.7	0.05	0.06	<0.02	0.002
W21R-4787	31197	10	20	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	8.46	<0.02	0.02	<0.02	0.001
W21R-4787	31198	20	30	WASTE	TRUE	Trachyte	<0.6	1	#N/A	1	7.97	0.05	0.05	<0.02	0.002
W21R-4787	31199	30	40	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	8.51	0.15	0.16	<0.02	—
W21R-4787	31200	40	50	WASTE	TRUE	Trachyte	<0.6	1.5	#N/A	1.5	8.44	0.04	0.04	<0.02	0.001
W21R-4787	31201	50	60	WASTE	TRUE	Trachyte	<0.6	1.5	#N/A	1.5	8.46	0.05	0.05	<0.02	0.003
W21R-4787	31202	60	70	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.67	0.05	0.04	<0.02	—
W21R-4787	31203	70	80	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.62	0.03	0.03	<0.02	0.003
W21R-4787	31204	80	90	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	8.37	0.04	0.03	<0.02	—
W21R-4787	31205	90	100	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	8.18	0.04	0.03	<0.02	0.002
W21R-4787	31206	100	110	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	8.35	0.03	0.02	<0.02	0.005
W21R-4787	31207	110	120	WASTE	TRUE	Trachyte	<0.6	1.5	#N/A	1.5	8.63	<0.02	0.02	<0.02	0.002
W21R-4787	31208	120	130	WASTE	TRUE	Trachyte	1.9	1.3	0.7	-0.6	8.01	0.21	0.15	0.06	0.002
W21R-4788	31268	0	10	WASTE	FALSE	Trachyte	0.9	1	1.1	0.1	7.59	0.26	0.23	0.03	0.003
W21R-4788	31269	10	20	WASTE	FALSE	Trachyte	<0.6	1.2	#N/A	1.2	8.04	0.12	0.12	<0.02	0.004

Table D-8. Acid Base Accounting for Trachyte (Current Data) (Page 6 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4788	31270	20	30	WASTE	FALSE	Trachyte	<0.6	2.2	#N/A	2.2	8.04	0.18	0.19	<0.02	0.004
W21R-4788	31271	30	40	WASTE	FALSE	Trachyte	<0.6	1.5	#N/A	1.5	7.96	0.18	0.18	<0.02	0.005
W21R-4788	31272	40	50	WASTE	TRUE	Trachyte	0.6	0.2	0.3	-0.4	8.07	0.14	0.12	0.02	0.002
W21R-4788	31273	50	60	WASTE	TRUE	Trachyte	<0.6	1.3	#N/A	1.3	8.12	0.15	0.15	<0.02	0.001
W21R-4788	31274	60	70	WASTE	TRUE	Trachyte	<0.6	1.7	#N/A	1.7	8.64	0.02	0.02	<0.02	0.001
W21R-4788	31275	70	80	WASTE	TRUE	Trachyte	<0.6	5.8	#N/A	5.8	8.46	0.04	0.03	<0.02	0.003
W21R-4788	31276	80	90	WASTE	FALSE	Trachyte	<0.6	1.5	#N/A	1.5	7.69	0.21	0.23	<0.02	0.006
W21R-4788	31277	90	100	WASTE	FALSE	Trachyte	<0.6	0	#N/A	0	7.87	0.06	0.06	<0.02	0.005
W21R-4788	31278	100	110	WASTE	TRUE	Trachyte	<0.6	1.2	#N/A	1.2	7.78	0.04	0.03	<0.02	0.006
W21R-4788	31279	110	120	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	8.09	0.02	0.02	<0.02	0.002
W21R-4788	31280	120	130	WASTE	FALSE	Trachyte	<0.6	1	#N/A	1	7.24	0.11	0.1	<0.02	0.001
W21R-4791	31490	10	20	WASTE	TRUE	Trachyte	<0.6	1	#N/A	1	7.85	<0.02	0.02	<0.02	—
W21R-4791	31494	50	60	WASTE	TRUE	Trachyte	<0.6	1	#N/A	1	8.59	<0.02	0.01	<0.02	—
W21R-4791	31498	90	100	WASTE	TRUE	Trachyte	<0.6	1.7	#N/A	1.7	8.65	<0.02	<0.01	<0.02	—
W21R-4859	36272	140	150	WASTE	TRUE	Trachyte	0.6	0.3	0.5	-0.3	8.19	0.06	0.04	0.02	—
W21R-4859	36273	150	160	WASTE	TRUE	Trachyte	<0.6	0.8	#N/A	0.8	8.18	0.04	0.04	<0.02	—
W21R-4859	36274	160	170	WASTE	TRUE	Trachyte	3.4	0.0	#N/A	-3.4	6.87	0.45	0.34	0.11	0.001
W21R-4860	36299	0	10	WASTE	TRUE	Trachyte	<0.6	0.5	#N/A	0.5	7.39	0.07	0.08	<0.02	—
W21R-4860	36300	10	20	WASTE	TRUE	Trachyte	<0.6	0.8	#N/A	0.8	7.77	0.08	0.09	<0.02	—
W21R-4860	36301	20	30	WASTE	TRUE	Trachyte	<0.6	0.2	#N/A	0.2	7.79	0.06	0.06	<0.02	—
W21R-4860	36302	30	40	WASTE	TRUE	Trachyte	<0.6	0.2	#N/A	0.2	7.76	0.05	0.04	<0.02	—
W21R-4860	36303	40	50	WASTE	TRUE	Trachyte	<0.6	0.5	#N/A	0.5	8.15	0.03	0.03	<0.02	—
W21R-4860	36304	50	60	WASTE	FALSE	Trachyte	<0.6	1.0	#N/A	1.0	7.98	0.06	0.07	<0.02	—
W21R-4860	36305	60	70	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	7.75	<0.02	0.10	<0.02	—
W21R-4860	36306	70	80	WASTE	FALSE	Trachyte	<0.6	0.3	#N/A	0.3	7.89	0.07	0.07	<0.02	—
W21R-4860	36307	80	90	WASTE	FALSE	Trachyte	<0.6	0.2	#N/A	0.2	7.63	0.14	0.18	<0.02	—
W21R-4860	36308	90	100	WASTE	FALSE	Trachyte	<0.6	0.2	#N/A	0.2	7.65	0.13	0.16	<0.02	—
W21R-4860	36309	100	110	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	7.53	0.09	0.11	<0.02	—
W21R-4860	36310	110	120	WASTE	FALSE	Trachyte	0.6	0.3	0.5	-0.3	7.67	0.08	0.06	0.02	0.002
W21R-4860	36311	120	130	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	7.47	0.06	0.06	<0.02	0.003
W21R-4860	36312	130	140	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	7.11	0.07	0.06	<0.02	0.002
W21R-4860	36313	140	150	WASTE	FALSE	Trachyte	1.6	1.3	0.8	-0.3	7.31	0.33	0.28	0.05	0.002
W21R-4860	36314	150	160	WASTE	FALSE	Trachyte	2.5	0.5	0.2	-2.0	7.13	0.28	0.20	0.08	0.002
W21R-4860	36315	160	170	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	7.64	0.13	0.13	<0.02	—

Table D-8. Acid Base Accounting for Trachyte (Current Data) (Page 7 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4860	36318	170	180	WASTE	FALSE	Trachyte	<0.6	2.3	#N/A	2.3	8.19	0.05	0.04	<0.02	—
W21R-4860	36319	180	190	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	8.31	0.05	0.04	<0.02	0.003
W21R-4860	36320	190	200	WASTE	FALSE	Trachyte	<0.6	0.5	#N/A	0.5	7.90	0.03	0.02	<0.02	0.001
W21R-4861	36346	0	10	WASTE	TRUE	Trachyte	0.9	1.3	1.4	0.4	7.11	0.28	0.25	0.03	0.002
W21R-4861	36347	10	20	WASTE	TRUE	Trachyte	<0.6	0.2	#N/A	0.2	7.92	0.13	0.14	<0.02	0.002
W21R-4861	36348	20	30	WASTE	TRUE	Trachyte	<0.6	0.2	#N/A	0.2	7.83	0.17	0.17	<0.02	0.003
W21R-4861	36349	30	40	WASTE	TRUE	Trachyte	<0.6	0.7	#N/A	0.7	7.48	0.25	0.24	<0.02	—
W21R-4861	36350	40	50	WASTE	TRUE	Trachyte	<0.6	0.5	#N/A	0.5	7.63	0.24	0.23	<0.02	—
W21R-4861	36351	50	60	WASTE	TRUE	Trachyte	1.6	0.2	0.1	-1.4	7.52	0.25	0.20	0.05	0.001
W21R-4861	36352	60	70	WASTE	TRUE	Trachyte	4.4	0.3	<0.1	-4.1	7.43	0.28	0.14	0.14	0.002
W21R-4861	36353	70	80	WASTE	TRUE	Trachyte	1.6	0.2	0.1	-1.4	7.71	0.18	0.13	0.05	—
W21R-4861	36354	80	90	WASTE	TRUE	Trachyte	1.6	0.8	0.5	-0.8	7.51	0.25	0.20	0.05	—
W21R-4861	36355	90	100	WASTE	TRUE	Trachyte	0.6	0.5	0.8	-0.1	7.52	0.26	0.24	0.02	—
W21R-4861	36356	100	110	WASTE	TRUE	Trachyte	1.3	0.5	0.4	-0.8	7.42	0.27	0.23	0.04	0.001
W21R-4861	36357	110	120	WASTE	TRUE	Trachyte	2.2	0.3	0.1	-1.9	7.26	0.32	0.25	0.07	—
W21R-4861	36358	120	130	WASTE	TRUE	Trachyte	1.6	1.0	0.6	-0.6	7.54	0.29	0.24	0.05	0.003
W21R-4861	36359	130	140	WASTE	TRUE	Trachyte	2.8	0.5	0.2	-2.3	7.43	0.31	0.22	0.09	0.003
W21R-4861	36360	140	150	WASTE	TRUE	Trachyte	2.2	0.8	0.4	-1.4	7.50	0.27	0.20	0.07	0.003
W21R-4861	36361	150	160	WASTE	TRUE	Trachyte	3.8	1.0	0.3	-2.8	7.50	0.26	0.14	0.12	0.003
W21R-4861	36362	160	170	WASTE	TRUE	Trachyte	3.1	0.5	0.2	-2.6	7.64	0.19	0.09	0.10	0.003
W21R-4861	36365	170	180	WASTE	TRUE	Trachyte	1.6	0.7	0.4	-0.9	7.78	0.12	0.07	0.05	0.009
W21R-4861	36366	180	190	WASTE	TRUE	Trachyte	3.8	1.0	0.3	-2.8	6.99	0.18	0.06	0.12	—
W21R-4861	36367	190	200	WASTE	TRUE	Trachyte	7.5	0.7	<0.1	-6.8	5.94	0.43	0.19	0.24	0.002
W21R-4863	36487	0	10	WASTE	TRUE	Trachyte	<0.6	0.5	#N/A	0.5	7.40	0.13	0.16	<0.02	0.005
W21R-4863	36490	30	40	WASTE	TRUE	Trachyte	<0.6	0.3	#N/A	0.3	7.77	0.31	0.24	<0.02	0.008
W21R-4863	36495	80	90	WASTE	TRUE	Trachyte	<0.6	0.3	#N/A	0.3	8.13	0.17	0.10	<0.02	0.011
W21R-4864	36533	0	10	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	7.72	0.15	0.19	<0.02	0.0013
W21R-4864	36533	0	10	WASTE	FALSE	Trachyte	<0.6	1.3	#N/A	1.3	7.72	0.15	0.19	<0.02	0.0013
W21R-4864	36537	40	50	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	8.05	0.08	0.11	<0.02	0.0029
W21R-4864	36537	40	50	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	8.05	0.08	0.11	<0.02	0.0029
W21R-4864	36541	80	90	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	8.29	0.01	0.03	<0.02	0.0046
W21R-4864	36541	80	90	WASTE	FALSE	Trachyte	<0.6	0.8	#N/A	0.8	8.29	0.01	0.03	<0.02	0.0046
W21R-4878	37579	540	550	WASTE	FALSE	Trachyte	<0.6	10.0	#N/A	10.0	9.02	<0.02	0.01	<0.02	0.001

Table D-8. Acid Base Accounting for Trachyte (Current Data) (Page 8 of 8)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	HCl S%	Sulfide Sulphur	Grade opt
W21R-4878	37583	580	590	WASTE	FALSE	Trachyte	5.3	58.8	11.1	53.5	8.37	0.18	0.01	0.17	0.0003
W21R-4887	38152	620	630	WASTE	FALSE	Trachyte	1.3	25.3	19.5	24.0	9.05	0.06	0.02	0.04	0.0031
W21R-4888	38223	500	510	WASTE	FALSE	Trachyte	0.6	2.5	4.2	1.9	9.26	0.05	0.03	0.02	0.003
W21R-4888	38229	540	550	WASTE	FALSE	Trachyte	3.1	2.9	0.9	-0.2	8.55	0.13	0.03	0.10	0.001

Table D-9. Acid Base Accounting for Colluvium and Undesignated (Historical Data) (Page 1 of 3)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3344	49108	20	30	WASTE	YES		0	12	12	12	0	0.02	—	—	0.01	—	—
FX3906	66163	70	80	WASTE	YES		—	193	193	193	8.5	0.02	—	0.01	0.01	—	—
FX3906	66168	120	130	WASTE	YES		—	229	229	228	8.6	0.03	—	0.01	0.02	—	—
FX3906	66172	160	170	WASTE	YES		—	292	292	292	8.4	0.01	—	—	—	—	—
FX3906	66176	200	210	WASTE	YES		8	240	30	232	7.7	0.26	0.01	—	0.25	—	—
FX3906	66180	240	250	WASTE	YES		12	295	24.6	283	8.1	0.38	—	—	0.37	0.01	—
FX3906	66184	280	290	WASTE	YES		8	179	22.4	172	8.1	0.25	—	—	0.25	—	—
FX3906	66188	320	330	ORE	YES		2	212	106	210	8.4	0.08	0.01	0.02	0.06	—	0.093
FX3906	66192	360	370	ORE	YES		—	20	20	19	8.5	0.02	—	—	0.02	—	0.012
FX3906	66196	400	410	ORE	YES		—	9	9	9	9	0.02	—	0.02	—	—	0.022
FX3906	66200	440	450	ORE	YES		—	12	12	12	9.2	0.03	0.01	0.01	0.01	—	0.025
FX3883	67373	20	30	ORE	YES		—	182	182	181	8.8	0.02	—	—	0.02	—	0.153
FX3886	67432	10	20	WASTE	YES		—	146	146	145	8.6	0.02	—	—	0.02	—	—
FX3886	67439	80	90	ORE	YES		2	69	34.5	67	8.3	0.08	0.02	—	0.04	0.02	0.024
FX3868	67518	0	10	WASTE	YES		1	2	0	1	7.3	0.05	0.01	—	—	0.03	—
FX3868	67519	10	20	WASTE	YES		—	2	0	1	7.8	0.04	0.01	—	—	0.03	—
FX3868	67520	20	30	WASTE	YES		—	4	0	3	7.6	0.02	—	—	—	0.01	—
FX3868	67521	30	40	WASTE	YES		1	4	0	3	7.5	0.06	0.02	—	—	0.04	—
FX3868	67522	40	50	WASTE	YES		6	3	0	−3	7.2	0.21	0.02	—	0.03	0.16	—
FX3868	67523	50	60	WASTE	YES		3	5	0	2	8.1	0.13	0.02	0.01	0.02	0.08	—
FX3868	67524	60	70	WASTE	YES		3	3	0	0	7.5	0.14	0.04	—	—	0.09	—
FX3868	67525	70	80	WASTE	YES		4	1	0	−2	7.6	0.18	0.04	—	—	0.14	—
FX3868	67526	80	90	WASTE	YES		25	2	0	−23	7.3	0.84	0.02	—	0.14	0.67	—
FX3868	67527	90	100	WASTE	YES		12	3	0	−9	7.3	0.44	0.06	—	0.15	0.23	—
FX3868	67528	100	110	WASTE	YES		22	4	0	−18	7	0.77	0.06	—	0.24	0.47	—
FX3868	67533	150	160	WASTE	YES		—	9	0	8	7.6	0.03	—	—	0.01	0.01	—
FX3868	67540	220	230	ORE	NO		9	8	0	−1	8	0.34	0.04	—	0.17	0.13	0.115
FX3868	67541	230	240	ORE	NO		10	10	0	−1	8	0.36	0.03	0.04	0.2	0.09	0.087
FX3868	67542	240	250	ORE	NO		3	8	0	5	8.6	0.1	0.02	—	0.05	0.03	0.04
FX3868	67543	250	260	ORE	NO		2	12	0	10	8.8	0.08	0.01	—	0.03	0.04	0.013
FX3868	67544	260	270	ORE	NO		2	9	0	7	8.8	0.08	0.02	—	0.02	0.03	0.013
FX3868	67545	270	280	ORE	NO		2	11	0	9	9	0.09	0.01	—	0.03	0.04	0.015
FX3868	67546	280	290	ORE	NO		3	10	0	8	8.9	0.09	—	—	0.02	0.06	0.037

Table D-9. Acid Base Accounting for Colluvium and Undesignated (Historical Data) (Page 2 of 3)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3868	67547	290	300	ORE	NO		3	8	0	5	9.1	0.11	0.02	—	0.01	0.08	0.026
FX3858	67676	50	60	WASTE	YES		—	3	3	3	8	0.04	0.01	0.01	0.02	—	—
FX3859	67697	10	20	WASTE	YES		2	56	0	54	8.3	0.09	0.02	—	—	0.06	—
FX3874	67868	220	230	WASTE	NO		—	8	0	8	8	0.01	—	—	—	—	—
FX3890	68387	60	70	WASTE	YES		—	15	0	14	8.2	0.01	—	—	0.01	—	0.009
FX3890	68396	150	160	ORE	YES		—	11	0	10	8.4	0.01	—	—	0.01	—	0.018
FX3900	68534	180	190	WASTE	YES		—	160	160	159	8.4	0.02	—	—	0.02	—	—
FX3891	68577	160	170	ORE	YES		2	69	34.5	67	8.5	0.07	0.02	—	0.05	—	0.013
FX3893	68619	160	170	WASTE	YES		2	62	31	60	8.7	0.08	0.02	0.01	0.04	—	—
FX3893	68627	240	250	WASTE	YES		—	114	114	114	7.7	0.02	0.01	0.01	—	—	—
FX3893	68631	280	290	WASTE	YES		—	111	111	111	8.4	0.01	—	—	—	—	—
FX3910	68786	420	430	ORE	YES		—	12	12	12	9.2	0.02	—	—	0.01	—	0.018
FX3905	68868	290	300	WASTE	YES		8	331	41.4	324	7.7	0.26	0.02	—	0.23	0.01	—
FX3908	68988	100	110	WASTE	YES		—	262	262	262	9	0.02	—	—	0.01	—	—
FX3908	68992	140	150	WASTE	YES		—	237	237	237	8.8	—	—	—	—	—	—
FX3908	68996	180	190	WASTE	YES		—	76	76	75	8.8	0.02	—	—	—	—	—
FX3908	69000	220	230	WASTE	YES		9	259	28.8	251	8.4	0.3	0.02	0.02	0.26	—	—
FX3908	69004	260	270	WASTE	YES		14	284	20.3	270	8	0.46	0.01	—	0.44	0.01	—
FX3908	69005	270	280	WASTE	YES		9	287	31.9	278	8	0.31	0.02	—	0.27	0.02	—
FX3908	69007	290	300	WASTE	YES		9	348	38.7	339	7.8	0.32	0.04	—	0.27	0.02	—
FX3908	69008	300	310	WASTE	YES		68	166	2.4	97	7.8	2.2	—	—	2.1	0.06	—
FX3908	69011	330	340	WASTE	YES		12	211	17.6	200	8	0.37	—	0.01	0.34	0.02	—
FX3908	69012	340	350	WASTE	YES		8	100	12.5	93	8.3	0.25	—	—	0.25	—	—
FX3908	69015	370	380	ORE	YES		5	20	4	16	8.3	0.18	0.02	0.02	0.05	0.09	0.038
FX3908	69016	380	390	ORE	YES		2	26	13	24	8	0.09	0.02	0.02	0.04	0.02	0.135
FX3908	69019	410	420	ORE	YES		1	8	8	7	8.4	0.07	0.03	0.01	0.03	—	0.018
FX3908	69020	420	430	WASTE	YES		1	44	44	43	8.7	0.06	0.02	0.02	0.03	—	—
FX3908	69023	450	460	ORE	YES		—	18	18	17	9.3	0.01	—	0.01	—	—	0.015
FX3908	69024	460	470	WASTE	YES		—	13	13	12	9.2	0.01	—	—	—	—	0.01
FX3908	69027	490	500	WASTE	NO		—	11	11	11	8.9	0.01	—	—	—	—	0.01
FX3911	69101	180	190	WASTE	YES		—	38	38	38	8.8	0.01	—	—	—	—	—
FX3909	69132	40	50	WASTE	YES		2	40	20	38	8.5	0.08	—	—	0.06	0.01	—
FX3913	69232	40	50	WASTE	YES		—	69	69	68	8.2	0.02	—	—	0.02	—	—

Table D-9. Acid Base Accounting for Colluvium and Undesignated (Historical Data) (Page 3 of 3)

Hole ID	Sample ID	From	To	Ore/Waste	In Pit	Rock Type	AGP	ANP	Ratio	NNP	pH	Total S%	H2O S%	HCl S%	HNO3 S%	RES S%	AU_OPT
FX3913	69234	60	70	WASTE	YES		—	52	52	52	8.3	0.02	—	—	0.01	—	—
FX3932	70260	30	40	WASTE	YES		—	203	203	202	8.2	0.02	—	0.02	—	—	—
FX4424	84638	190	200	WASTE	YES		1	61		59	0	0.05				0.03	—
FX4453	86028	30	40	WASTE	YES		1	19		18	0	0.04				0.04	—

Table D-10. Whole Rock Sample Results Summary – Upper Deadwood (Page 1 of 4)

SAMPLE_ID	31762	49118	49439	50208	50274	51714	50452	52090	52387	49657	52921	67745	67912	70226	69381	31755	50865	52037	52137	52376	52526	67056	67932	67376
HOLE-ID	1357	FX3344	FX3349	FX3360	FX3361	FX3385	FX3397	FX3398	FX3409	FX3406	FX3420	FX3860	FX3877	FX3931	FX3928	1357	FX3370	FX3391	FX3393	FX3409	FX3412	FX3844	FX3878	FX3883
FROM	100	120	80	120	130	30	260	290	360	160	200	190	160	90	170	30	190	260	260	250	250	250	60	50
TO	110	130	90	130	140	40	270	300	370	170	210	200	170	100	180	40	200	270	270	260	260	260	70	60
AG_OPT	0.000	0.193	NC	0.000	0.156	0.000	NC	0.120	0.000	0.000	0.100	0.000	NC	0.000	NC	0.000	0.185	NC	0.078	NC	NC	0.148	NC	0.129
AG (PPM)	<0.00	0.00	0.00	0.00	0.00	0.54	0.05	2.65	0.15	0.14	0.00	0.00	0.00	0.61	1.33	<0.00	0.00	0.31	1.55	1.50	0.00	0.00	0.00	0.00
AL (%)	3.01	0.50	0.50	0.97	0.57	0.87	0.51	0.44	0.47	0.63	0.47	0.43	0.68	0.69	0.57	2.66	0.67	0.37	2.17	0.64	1.50	0.81	0.26	1.03
AS (PPM)	1600	10000	3120	1540	6320	1310	304	4650	572	264	5750	3020	780	1870	2280	3250	1135	241	4800	1065	4550	874	320	169.5
AU_OPT	0.028	0.187	0.014	0.010	0.234	0.010	0.002	0.096	0.009	0.008	0.075	0.038	0.001	0.017	0.060	0.048	0.057	0.000	0.066	0.033	0.096	0.032	0.003	0.015
B (PPM)	NS	9	10	10	10	10	10	<10	<10	<10	5	<10	<10	10	10	<0	10	<10	40	<10	30	10	<10	10
BA (PPM)	230	40	230	300	120	130	70	40	20	100	90	150	90	50	80	190	130	170	150	440	110	300	220	130
BE (PPM)	0.50	1.28	1.42	3.32	2.22	6.17	2.83	1.87	2.22	0.95	2.41	6.14	1.00	2.32	1.59	1.00	2.73	3.03	3.44	1.90	3.26	2.14	0.95	2.18
BI (PPM)	2.00	0.12	0.34	0.26	0.22	0.30	0.27	0.09	0.21	0.13	0.13	0.28	0.12	0.12	0.31	<0.00	0.10	<0.010	0.03	0.23	0.12	0.10	0.08	0.23
CA (%)	5.50	0.79	6.69	0.45	2.01	0.63	11.00	2.09	7.30	0.14	0.79	0.33	0.09	3.22	4.07	2.24	2.06	6.79	8.74	0.30	7.21	5.98	0.04	3.38
CD (PPM)	4.00	0.47	0.15	0.72	0.18	0.62	0.60	0.28	0.12	0.08	1.05	0.18	0.05	0.23	0.30	7.50	1.05	2.54	0.44	1.39	0.43	0.49	0.39	0.58
CE (PPM)	NS	37.9	65.9	77.2	71.5	80.7	40.9	53.9	53.8	30.0	35.4	74.3	>500.0	65.0	54.9	NS	36.3	35.9	65.2	106.0	58.4	41.8	147.5	70.7
CO (PPM)	5.0	7.1	13.3	16.2	12.3	14.9	11.5	11.1	10.3	1.2	10.8	10.7	1.7	14.4	11.8	5.0	5.8	4.6	9.2	12.0	11.4	6.5	1.8	4.6
CR (PPM)	54	161	145	144	136	15	9	10	11	27	127	19	11	16	40	64	425	9	29	19	67	13	7	9
CS (PPM)	NS	1.62	0.63	2.57	1.51	2.23	2.76	0.78	0.75	0.55	1.10	0.21	0.40	2.42	1.35	NS	1.48	1.21	3.05	3.82	2.80	1.59	0.26	2.25
CU (PPM)	28.0	27.2	15.9	15.7	24.9	9.0	16.7	13.1	11.2	15.3	13.8	13.9	8.2	15.5	8.0	60.0	16.5	14.4	17.9	21.9	18.9	19.9	6.1	13.5
F (PPM)	1890	0	0	0	0	0	0	0	0	0	0	0	0	0	0	710	0	0	0	0	0	0	0	0
FE (%)	4.02	3.86	5.04	5.29	4.64	7.26	3.78	4.12	4.14	3.04	3.74	8.84	4.10	4.39	5.68	3.30	2.12	2.05	3.86	2.81	3.86	2.48	1.00	1.82
GA (PPM)	NS	3.92	4.38	5.28	5.13	8.83	2.56	2.74	2.91	6.18	3.47	2.17	8.23	4.35	3.54	NS	3.22	1.62	10.55	3.23	7.61	2.81	1.31	3.13
GE (PPM)	NS	0.11	0.16	0.18	0.17	0.20	0.13	0.12	0.13	0.09	0.10	0.25	0.87	0.11	0.16	NS	0.08	0.07	0.22	0.14	0.22	0.10	0.10	0.11
HF (PPM)	NS	0.17	0.22	0.37	0.34	0.62	0.14	0.25	0.29	0.24	0.23	0.13	0.15	0.32	0.31	NS	0.21	0.10	0.43	0.21	0.41	0.15	0.35	0.57
HG (PPM)	340.00	1.06	0.21	0.14	0.95	0.28	0.08	0.99	0.29	0.09	0.56	0.65	0.15	0.60	0.53	610.00	0.52	0.62	0.93	0.81	0.89	0.57	0.06	0.33
IN (PPM)	NS	0.040	0.024	0.024	0.033	0.017	0.022	0.031	0.016	0.023	0.028	0.028	0.018	0.021	0.020	NS	0.019	0.024	0.040	0.026	0.047	0.022	0.015	0.014
K (%)	2.740	0.300	0.350	0.560	0.540	0.530	0.400	0.290	0.330	0.300	0.240	0.410	0.320	0.540	0.380	2.570	0.350	0.210	1.430	0.350	0.830	0.400	0.130	0.230
LA (PPM)	NS	13.8	24.8	33.9	26.0	28.3	13.7	19.6	19.8	12.9	13.1	29.7	490.0	24.0	20.1	<0.0	17.7	15.9	24.8	58.4	22.2	18.4	71.7	40.5
LI (PPM)	NS	7.6	13.1	25.1	12.5	25.3	1.6	8.0	11.7	1.7	8.5	1.3	14.9	18.2	14.6	NS	4.7	1.4	18.4	1.6	26.0	3.6	1.9	6.2
MG (%)	2.24	0.15	0.14	0.21	0.11	0.26	2.21	0.63	2.39	0.08	0.07	0.03	0.12	1.55	0.92	0.98	0.12	0.09	2.13	0.08	2.71	1.75	0.02	0.96
MN (PPM)	1515	165	2050	1630	831	1050	1730	668	1600	79	745	2860	32	760	1650	900	548	704	971	308	1040	689	62	655
MO (PPM)	2.00	14.40	15.05	12.90	11.90	3.93	1.01	1.14	1.37	1.34	11.95	7.12	1.53	1.18	3.07	3.00	34.50	2.30	1.96	1.79	5.68	1.12	2.81	1.38
NA (%)	0.11	0.01	0.01	0.12	0.01	0.01	0.01	0.02	0.01	0.01	0.03	0.02	<0.01	0.01	0.02	0.05	0.02	0.01	0.02	0.03	0.04	0.01	0.01	0.32
NB (PPM)	NS	0.33	0.35	0.42	0.70	0.82	0.18	0.72	0.46	0.51	0.67	0.30	0.11	0.29	0.79	NS	0.31	0.20	2.11	0.30	1.17	0.22	0.22	0.78
NI (PPM)	12.0	12.8	16.2	30.5	14.3	14.0	9.7	11.7	11.1	4.5	16.5	12.5	3.0	13.5	26.1	13.0	37.6	14.8	13.5	61.8	15.6	11.0	2.8	9.5
P (PPM)	970	1040	1280	1440	1100	1930	1060	930	1350	500	1130	1800	620	1040	1500	1800	370	240	1340	830	1270	500	100	560
PB (PPM)	116.0	31.2	8.6	15.6	11.3	8.7	13.7	17.3	7.9	34.2	53.6	15.6	6.4	8.9	13.7	506.0	86.7	115.5	20.7	102.5	19.0	20.5	18.2	75.1
RB (PPM)	NS	17.7	26.5	38.2	27.1	40.2	21.0	12.0	16.6	13.5	15.1	3.9	24.0	30.4	20.8	0.0	18.8	10.3	48.2	18.8	40.3	18.5	5.7	11.3

Table D-10. Whole Rock Sample Results Summary – Upper Deadwood (Page 2 of 4)

SAMPLE_ID	31762	49118	49439	50208	50274	51714	50452	52090	52387	49657	52921	67745	67912	70226	69381	31755	50865	52037	52137	52376	52526	67056	67932	67376
HOLE-ID	1357	FX3344	FX3349	FX3360	FX3361	FX3385	FX3397	FX3398	FX3409	FX3406	FX3420	FX3860	FX3877	FX3931	FX3928	1357	FX3370	FX3391	FX3393	FX3409	FX3412	FX3844	FX3878	FX3883
FROM	100	120	80	120	130	30	260	290	360	160	200	190	160	90	170	30	190	260	260	250	250	250	60	50
TO	110	130	90	130	140	40	270	300	370	170	210	200	170	100	180	40	200	270	270	260	260	260	70	60
RE (PPM)	NS	0.0010	0.0010	0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	0.0010	<0.0010	0.0010	<0.0010	NS	0.0020	<0.0010	<0.0010	<0.0010	0.0001	<0.0010	<0.0010	<0.0010
ROCK_TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2
S (%)	NS	0.10	0.01	0.02	0.37	0.01	0.02	0.18	0.02	0.09	0.10	0.54	0.06	0.05	0.06	NS	0.02	0.01	0.07	0.13	0.06	0.08	0.04	0.06
SB (PPM)	21.00	80.80	33.80	15.25	60.80	27.40	3.45	53.00	11.00	9.52	98.30	33.30	8.84	20.30	41.20	35.00	13.10	5.55	103.50	18.95	153.50	23.80	6.60	8.26
SC (PPM)	NS	2.2	4.6	4.7	3.7	2.0	3.8	2.5	4.1	1.8	2.1	2.7	3.9	3.3	3.8	NS	3.0	3.8	4.3	3.3	4.4	3.1	1.3	2.1
SE (PPM)	<0.2	3.8	1.1	0.3	2.8	0.5	0.6	1.3	1.5	0.3	1.6	2.8	3.4	1.2	1.2	<0.2	0.4	0.7	5.8	1.0	3.5	1.4	0.5	0.8
SI (%)	NS				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
SN (PPM)	NS	0.6	0.5	0.5	0.7	0.4	0.3	0.3	0.3	0.5	0.5	0.6	0.4	1.0	0.5	<0.0	0.7	0.2	0.7	0.6	0.6	1.1	0.5	0.5
SR (PPM)	59.0	216.0	52.2	151.5	133.0	54.5	122.0	216.0	54.4	720.0	298.0	193.5	115.5	40.3	59.5	150.0	85.7	40.4	656.0	344.0	529.0	225.0	59.6	165.5
TA (PPM)	NS	0.01	0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	NS	0.01	<0.01	<0.01	<0.01	0.00	<0.01	<0.01	0.01
TE (PPM)	0.90	0.54	0.04	0.06	3.75	0.28	0.01	0.14	0.12	0.04	0.30	0.82	0.03	0.26	0.37	1.65	3.33	0.02	0.05	1.12	0.53	7.89	0.01	0.90
TH (PPM)	NS	4.8	5.5	9.1	5.9	6.6	4.9	5.8	5.4	3.5	4.4	6.0	118.0	5.3	5.8	<0.0	4.4	3.6	5.6	17.6	5.1	3.8	51.9	16.4
TI (%)	0.010	0.005	0.008	0.013	0.006	0.007	0.005	0.005	0.008	0.005	0.004	0.005	<0.005	0.006	0.006	0.090	0.010	0.005	0.011	0.005	0.009	0.005	<0.005	0.009
TL (PPM)	NS	2.68	10.95	12.80	20.20	51.00	8.22	16.50	2.07	1.15	47.40	15.25	1.92	12.15	6.06	NS	5.65	1.66	16.35	7.31	24.10	6.68	2.08	2.04
U (PPM)	NS	9.10	5.91	7.36	7.44	8.76	2.07	4.33	4.09	0.95	7.61	70.00	30.10	14.60	6.64	<0.00	5.28	1.42	4.90	3.83	3.23	1.35	15.05	3.17
V (PPM)	35	13	80	179	20	298	14	14	14	59	94	29	30	21	19	40	24	9	23	31	19	13	16	21
W (PPM)	10.00	9.92	10.40	17.40	7.30	57.10	3.85	6.69	9.01	11.80	25.70	59.20	13.75	3.30	4.32	30.00	5.98	3.17	4.50	11.70	7.13	3.81	2.76	2.61
Y (PPM)	NS	6.65	11.05	11.65	8.73	13.15	10.60	8.64	10.95	4.60	6.83	10.45	35.80	9.08	12.70	NS	5.68	4.75	12.35	9.32	10.55	6.98	14.40	10.20
ZN (PPM)	82	65	34	104	43	33	73	45	30	10	107	439	51	56	83	258	105	174	72	128	64	81	55	67
ZR (PPM)	NS	8.1	11.7	23.9	15.2	24.9	6.4	10.8	13.2	12.3	9.6	6.8	5.1	14.4	14.2	NS	9.3	4.0	15.0	10.2	12.9	4.5	21.6	36.9
AU_FIREOPT	0.000	0.241	0.014	0.013	0.240	0.012	NC	0.103	0.010	0.010	0.099	0.031	NC	0.019	NC	0.000	0.058	NC	0.074	0.038	NC	0.035	NC	0.034
AG_FIREOPT	0.000	0.193	NC	0.000	0.156	0.000	NC	0.120	0.000	0.000	0.100	0.000	NC	0.000	NC	0.000	0.185	NC	0.078	NC	NC	0.148	NC	0.129

Table D-10. Whole Rock Sample Results Summary – Upper Deadwood (Page 3 of 4)

SAMPLE_ID	36369	36518	28666	31560	32267	36073	39990
HOLE-ID	W21R-4861	W21R-4863	W21R-4755	W21R-4792	W21R-4801	W21R-4856	W21R-4913
FROM	220	300	30	120	40	20	140
TO	220	300	30	120	40	20	140
AG_OPT	0.1	4.35	0.04	0.35	0.06	0.11	0.08
AG (PPM)	0.41	0.26	1.04	0.38	1.02	0.76	0.49
AL (%)	707	1570	106.5	386	150.5	147.5	178.5
AS (PPM)	0.11	9.09	<0.02	0.11	<0.02	<0.02	0.02
AU_OPT	<10	<10	<10	<10	10	<10	<10
B (PPM)	180	190	180	190	150	180	140
BA (PPM)	0.55	1.97	4.46	2.07	5.21	1.89	3.2
BE (PPM)	0.16	0.29	0.25	0.07	0.2	0.1	0.09
BI (PPM)	0.08	0.1	0.24	0.07	3.09	3.22	7.17
CA (%)	0.44	0.57	0.5	1.73	0.18	2.33	0.5
CD (PPM)	34	71.5	77.3	9.29	82.2	49.2	36.6
CE (PPM)	4.2	2.9	7.8	6	14.7	5.8	5.1
CO (PPM)	15	17	15	7	15	17	11
CR (PPM)	0.17	0.41	6.64	1.37	3.06	1.76	2.23
CS (PPM)	7.7	16.8	16.6	9.3	15.4	20.3	12.1
CU (PPM)	NS	NS	NS	NS	NS	NS	NS
F (PPM)	1.91	3.57	1.58	1.36	4.72	2.09	2.22
FE (%)	1.41	2.63	3.3	1.49	4.31	2.83	1.84
GA (PPM)	0.06	0.08	0.1	<0.05	0.18	0.06	0.05
GE (PPM)	0.25	0.38	0.17	0.09	0.22	0.22	0.12
HF (PPM)	0.11	0.43	0.08	0.2	0.3	0.09	0.28
HG (PPM)	0.01	0.012	0.024	0.017	0.021	0.019	0.02
IN (PPM)	0.23	0.2	0.46	0.2	0.58	0.34	0.26
K (%)	14.9	27	43.8	3.8	30.7	23.2	14.6
LA (PPM)	2.2	3.9	2.7	1	4.7	6.3	1.8
LI (PPM)	0.04	0.03	0.16	0.05	0.27	0.31	0.43
MG (%)	42	237	359	287	1815	780	804
MN (PPM)	4.47	6.68	0.98	1.14	1.59	1.65	0.92
MO (PPM)	<0.01	0.02	0.01	<0.01	0.01	0.04	0.02
NA (%)	0.14	0.48	0.16	0.2	0.34	0.09	0.19
NB (PPM)	5.2	4	16.3	11.4	13.5	15	8.9
NI (PPM)	60	210	520	140	1510	320	320
P (PPM)	12.4	12.4	32	64.8	11.8	48.1	35.3
PB (PPM)	6.9	6.2	26.2	10.9	34.5	17.8	16
RB (PPM)	0.1	4.35	0.04	0.35	0.06	0.11	0.08

Table D-10. Whole Rock Sample Results Summary – Upper Deadwood (Page 4 of 4)

SAMPLE_ID	36369	36518	28666	31560	32267	36073	39990
HOLE-ID	W21R-4861	W21R-4863	W21R-4755	W21R-4792	W21R-4801	W21R-4856	W21R-4913
FROM	220	300	30	120	40	20	140
TO	220	300	30	120	40	20	140
RE (PPM)	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ROCK_TYPE	1	1	2	2	1	2	2
S (%)	0.17	0.24	0.02	0.08	<0.01	0.07	0.01
SB (PPM)	17.15	40.2	2.11	11.3	2.62	4.15	2.95
SC (PPM)	1.3	4.5	4	1.6	4.3	3.1	3.6
SE (PPM)	3.2	2.1	<0.2	0.6	<0.2	<0.2	0.4
SI (%)	NS	NS	NS	NS	NS	NS	NS
SN (PPM)	0.2	0.8	0.4	0.2	0.3	0.3	0.2
SR (PPM)	98.2	133.5	96.9	89.9	56.5	222	87.8
TA (PPM)	<0.01	<0.01	0.01	<0.01	0.01	0.01	0.01
TE (PPM)	0.01	6.58	0.02	0.14	0.02	0.01	0.01
TH (PPM)	24.1	4.9	16.5	1.8	8.5	4.7	3.6
TI (%)	<0.005	0.007	<0.005	<0.005	0.01	0.01	<0.005
TL (PPM)	1.12	6.99	4.25	6.06	3.69	1.54	1.23
U (PPM)	16.15	26.4	11.55	1.24	1.86	1.8	0.83
V (PPM)	33	50	15	20	18	24	8
W (PPM)	6.25	38.6	0.7	3.69	6.3	2.74	2.21
Y (PPM)	3.25	3.13	11.75	3.16	16.7	5.51	6.42
ZN (PPM)	83	92	119	238	50	183	51
ZR (PPM)	10.1	14.5	5.2	3.5	12.5	7.4	4.3
AU_FIREOPT	NS	NS	NS	NS	NS	NS	NS
AG_FIREOPT	NS	NS	NS	NS	NS	NS	NS

Table D-11. Whole Rock Sample Results Summary – Intermediate Deadwood (Page 1 of 4)

SAMPLE_ID	49584	49585	49705	49513	49254	50361	50618	50620	50801	51383	51518	51581	51277	50774	52438
HOLE-ID	FX3351	FX3351	FX3353	FX3350	FX3346	FX3362	FX3366	FX3366	FX3369	FX3378	FX3380	FX3382	FX3395	FX3398	FX3410
FROM	230	240	140	170	180	350	320	340	200	170	220	200	310	170	370
TO	240	250	150	180	190	360	330	350	210	180	230	210	320	180	380
AG_OPT	0.472	0.128	0.070	NC	0.089	0.220	0.261	0.134	NC	NC	0.180	NC	0.223	0.090	0.102
AG (PPM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	3.11	2.16	0.13
AL (%)	0.63	0.56	0.40	0.29	0.74	0.55	0.33	1.00	0.50	0.72	1.07	0.48	0.22	0.21	0.40
AS (PPM)	7530	3650	1905	734	3900	5420	2790	5330	408	844	2120	5.6	9460	244	735
AU_OPT	0.228	0.138	0.136	0.016	0.088	0.168	0.154	0.136	0.002	0.023	0.066	0.001	0.152	0.024	0.009
B (PPM)	9	9	9	9	9	9	9	20	9	10	10	<10	<10	<10	<10
BA (PPM)	100	150	150	170	110	200	160	170	330	230	90	460	410	130	140
BE (PPM)	2.39	2.02	1.20	2.36	1.00	1.99	1.08	6.80	1.36	2.65	1.29	1.56	1.83	0.42	3.27
BI (PPM)	0.13	0.17	0.13	0.15	0.12	0.34	0.37	0.11	0.15	0.29	0.09	0.04	0.20	0.04	0.07
CA (%)	0.74	0.27	0.28	0.19	0.26	1.27	0.57	2.68	2.46	0.51	1.60	2.91	2.63	0.07	8.62
CD (PPM)	1.64	1.32	0.23	2.35	0.81	0.19	0.22	0.29	3.73	0.11	0.70	0.28	1.16	0.83	0.10
CE (PPM)	54.0	46.8	55.1	25.9	50.5	75.0	29.7	46.0	58.4	78.0	40.7	95.5	49.1	20.3	41.8
CO (PPM)	7.1	5.7	9.6	3.9	5.5	5.9	3.2	8.5	7.7	10.8	4.3	7.4	6.1	2.1	11.0
CR (PPM)	243	230	215	278	217	180	308	291	234	98	154	4	19	5	14
CS (PPM)	1.20	0.96	0.42	0.87	1.16	1.35	0.85	2.37	5.50	1.40	1.22	3.74	0.66	0.99	0.64
CU (PPM)	24.1	20.3	19.3	14.4	44.9	10.4	20.0	13.5	24.7	26.1	21.2	4.8	40.6	8.0	15.7
F (PPM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FE (%)	4.09	6.97	3.07	1.74	2.83	3.48	4.84	4.42	2.11	2.69	2.84	3.59	3.36	1.07	3.10
GA (PPM)	4.82	6.85	3.17	1.39	3.11	3.26	4.98	7.28	2.38	4.76	6.35	1.67	1.88	1.44	3.09
GE (PPM)	0.10	0.16	0.12	0.04	0.11	0.13	0.17	0.32	0.09	0.12	0.12	0.13	0.11	0.05	0.10
HF (PPM)	0.39	0.37	0.18	0.26	0.21	0.68	0.50	1.28	0.28	0.55	0.31	0.23	0.33	0.15	0.68
HG (PPM)	3.15	1.54	0.65	0.18	2.13	0.92	1.93	0.75	0.13	0.24	0.94	0.02	0.67	0.26	0.10
IN (PPM)	0.042	0.033	0.026	0.011	0.032	0.022	0.027	0.025	0.019	0.032	0.029	0.049	0.042	0.007	0.018
K (%)	0.450	1.020	0.350	0.150	0.280	0.310	0.590	0.680	0.230	0.450	0.640	0.270	0.180	0.100	0.270
LA (PPM)	21.8	19.6	20.9	14.0	19.3	37.4	11.6	14.3	30.9	42.2	14.5	49.0	18.8	10.9	14.3
LI (PPM)	5.0	13.2	3.3	2.1	2.8	8.1	11.8	37.6	6.4	5.2	4.7	0.9	2.1	0.8	3.9
MG (%)	0.07	0.07	0.04	0.04	0.05	0.09	0.07	0.19	0.79	0.10	0.08	0.66	0.07	0.03	0.11
MN (PPM)	295	366	291	591	92	801	138	641	665	519	132	1270	965	117	2000
MO (PPM)	21.70	22.00	18.40	22.90	20.00	17.15	28.00	27.50	18.85	8.06	13.55	1.78	4.61	1.22	2.11
NA (%)	0.05	0.04	0.02	0.02	0.03	0.10	0.02	0.02	0.07	0.01	0.01	0.03	0.01	<0.01	0.01
NB (PPM)	1.75	1.30	0.55	0.37	0.53	0.73	0.96	3.34	0.36	0.25	1.19	0.11	0.74	0.24	1.08
NI (PPM)	16.1	11.7	15.8	15.7	13.5	12.5	12.6	17.2	37.8	20.9	12.2	3.6	9.7	3.9	12.2
P (PPM)	1300	700	1100	160	1150	1010	830	1470	750	1320	890	1710	1170	80	1530

Table D-11. Whole Rock Sample Results Summary – Intermediate Deadwood (Page 2 of 4)

SAMPLE_ID	49584	49585	49705	49513	49254	50361	50618	50620	50801	51383	51518	51581	51277	50774	52438
HOLE-ID	FX3351	FX3351	FX3353	FX3350	FX3346	FX3362	FX3366	FX3366	FX3369	FX3378	FX3380	FX3382	FX3395	FX3398	FX3410
FROM	230	240	140	170	180	350	320	340	200	170	220	200	310	170	370
TO	240	250	150	180	190	360	330	350	210	180	230	210	320	180	380
PB (PPM)	50.5	25.3	16.4	60.3	27.5	24.8	15.6	9.7	181.5	26.3	15.4	19.8	69.4	79.2	6.4
RB (PPM)	16.5	18.9	10.4	11.2	12.7	16.9	14.6	38.9	20.1	25.4	30.1	14.0	8.3	5.2	13.5
RE (PPM)	0.0020	0.0020	0.0010	0.0010	0.0020	0.0010	0.0020	0.0020	0.0010	0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010
ROCK_TYPE	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
S (%)	0.37	1.46	0.32	0.01	0.10	0.05	0.90	0.06	0.02	0.13	0.06	0.12	0.03	0.07	0.01
SB (PPM)	123.00	94.70	68.50	13.85	81.00	40.70	77.20	76.40	10.15	15.85	89.90	0.57	58.10	9.40	10.15
SC (PPM)	1.7	1.3	1.4	1.2	1.2	2.8	1.0	2.8	2.8	4.2	2.3	7.3	3.8	0.7	5.1
SE (PPM)	1.9	2.8	2.0	0.4	3.6	1.0	3.6	0.8	0.3	0.7	2.0	0.4	0.8	0.2	0.5
SI (%)												0.0	0.0	0.0	0.0
SN (PPM)	0.8	0.6	0.5	0.5	0.6	0.6	0.8	0.8	0.5	0.8	0.6	0.4	0.7	0.2	0.4
SR (PPM)	268.0	299.0	328.0	64.8	1430.0	86.5	348.0	136.5	176.5	183.5	289.0	373.0	70.6	98.0	56.2
TA (PPM)	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	<0.01	<0.01	<0.01
TE (PPM)	1.22	0.84	1.80	0.12	0.55	0.76	4.01	1.93	0.25	0.28	0.34	<0.01	1.45	0.95	0.07
TH (PPM)	6.6	6.2	4.8	12.1	5.8	17.8	3.5	4.5	8.6	22.3	3.4	10.4	5.2	6.7	5.0
TI (%)	0.005	0.005	0.005	0.005	0.005	0.007	0.005	0.009	0.030	0.007	0.006	0.005	0.005	<0.005	0.007
TL (PPM)	21.70	37.90	3.86	3.11	2.74	9.31	11.15	6.91	2.19	5.35	2.91	0.33	4.25	1.33	13.45
U (PPM)	9.68	6.02	3.67	4.04	8.13	7.73	4.56	10.65	2.54	6.65	6.94	1.50	10.25	1.30	2.27
V (PPM)	29	34	124	33	53	21	21	42	20	70	24	23	18	29	39
W (PPM)	49.60	93.40	24.00	8.44	41.10	16.95	61.90	42.20	6.36	16.20	47.10	0.30	4.43	2.74	13.25
Y (PPM)	9.24	4.50	9.22	2.85	7.87	11.10	2.52	11.75	7.56	10.80	10.00	18.15	8.75	1.96	9.36
ZN (PPM)	126	106	31	236	69	58	32	66	334	42	69	107	99	34	38
ZR (PPM)	17.3	14.5	10.1	11.0	12.0	33.6	11.5	31.4	12.7	31.3	11.6	9.4	10.5	6.3	12.3
AU_FIREOPT	0.301	0.172	0.195	0.019	0.113	0.230	0.202	0.145	NC	0.026	0.088	NC	0.168	0.088	0.008
AG_FIREOPT	0.472	0.128	0.070	NC	0.089	0.220	0.261	0.134	NC	NC	0.180	NC	0.223	0.090	0.102

Table D-11. Whole Rock Sample Results Summary – Intermediate Deadwood (Page 3 of 4)

SAMPLE_ID	52447	49328	66496	67361	67568	67499	67692	67478	68453	69580	69691	69924	69794	80902	50755
HOLE-ID	FX3410	FX3399	FX3834	FX3852	FX3865	FX3867	FX3858	FX3885	FX3892	FX3920	FX3922	FX3923	FX3925	FX4248	FX3381
FROM	460	120	250	300	70	80	210	70	220	210	420	220	370	200	180
TO	470	130	260	310	80	90	220	80	230	220	430	230	380	210	190
AG_OPT	NC	NC	0.135	NC	NC	0.282	0.083	NC	NC	NC	0.530	0.106	0.173	NC	NC
AG (PPM)	0.25	0.25	0.00	0.07	0.00	0.00	0.00	0.00	0.00	1.84	0.00	0.00	0.00	0.20	0.00
AL (%)	0.39	0.57	0.35	2.09	0.29	0.33	0.32	0.64	0.57	0.33	0.65	0.70	2.15	0.30	2.54
AS (PPM)	1390	3050	5140	203	73.5	4720	1880	316	205	239	1670	703	550	74.8	147
AU_OPT	0.036	0.017	0.092	0.001	0.002	0.186	0.192	0.004	0.000	0.003	0.095	0.008	0.013	0.000	0.004
B (PPM)	<10	<10	<10	20	<10	<10	<10	10	10	<10	10	10	40	<10	50
BA (PPM)	110	150	80	210	240	330	290	120	40	510	210	80	200	50	40
BE (PPM)	5.11	3.12	2.38	3.25	0.52	0.90	4.58	2.25	1.69	0.59	1.61	3.49	4.87	2.26	3.29
BI (PPM)	0.08	0.04	0.10	0.56	1.25	0.12	0.31	0.17	0.11	0.22	0.44	0.09	0.28	0.15	0.26
CA (%)	2.32	4.93	5.76	1.60	0.15	0.27	0.39	8.99	11.75	0.08	7.61	5.65	4.40	9.42	0.36
CD (PPM)	0.29	0.83	1.77	0.03	0.02	1.22	0.41	0.32	0.02	0.18	1.16	1.30	1.05	0.16	0.18
CE (PPM)	69.3	48.8	45.3	59.0	49.7	233.0	78.1	73.1	57.4	36.0	84.1	37.9	75.3	51.6	35.2
CO (PPM)	10.7	6.6	6.6	9.0	0.7	1.7	9.6	8.2	4.7	1.0	17.4	8.6	12.8	7.9	16.0
CR (PPM)	18	9	13	31	7	25	12	8	12	7	16	26	34	24	38
CS (PPM)	1.13	0.99	1.14	7.56	0.41	0.18	0.30	1.54	4.45	0.41	2.86	1.78	6.54	3.14	13.40
CU (PPM)	19.6	13.5	42.5	17.4	4.5	32.9	13.2	13.9	12.3	18.0	33.8	14.9	20.1	9.5	27.6
F (PPM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FE (%)	3.04	2.44	2.64	2.82	1.02	2.87	6.09	3.40	1.62	1.07	5.25	2.07	3.27	2.65	1.57
GA (PPM)	3.52	3.03	1.85	8.59	1.11	3.28	1.92	2.86	2.17	1.36	5.38	4.40	7.88	1.93	8.30
GE (PPM)	0.12	0.09	0.11	0.12	0.11	0.16	0.19	0.15	0.10	0.07	0.26	0.14	0.17	0.11	0.08
HF (PPM)	0.45	0.15	0.15	0.73	2.26	0.33	0.16	0.31	0.11	0.90	0.55	0.32	0.59	0.37	0.14
HG (PPM)	0.19	0.39	1.04	0.10	0.27	0.23	0.40	0.20	0.05	0.11	0.66	0.15	0.18	0.08	0.04
IN (PPM)	0.027	0.033	0.031	0.032	0.006	0.023	0.021	0.018	0.025	0.007	0.034	0.021	0.036	0.014	0.030
K (%)	0.260	0.290	0.210	1.040	0.130	0.410	0.390	0.290	0.360	0.370	0.440	0.430	1.130	0.220	1.320
LA (PPM)	28.5	20.7	16.6	30.6	27.3	156.0	32.2	32.8	21.4	20.1	36.6	13.2	37.3	19.5	14.8
LI (PPM)	3.0	2.5	2.7	7.5	0.7	1.6	1.9	5.7	0.9	1.2	14.2	2.6	4.6	1.1	3.3
MG (%)	0.07	0.09	1.30	0.64	0.03	0.03	0.04	2.45	0.18	0.01	3.69	0.16	1.86	2.25	0.25
MN (PPM)	1450	862	938	715	56	68	819	1350	932	234	5160	973	2450	1340	67
MO (PPM)	2.45	1.54	2.08	0.99	1.42	7.06	3.16	1.30	0.63	1.34	5.14	1.86	1.99	0.88	1.22
NA (%)	0.02	0.07	0.02	0.01	0.05	0.01	0.01	0.09	0.02	0.03	0.02	0.02	0.02	<0.01	0.05
NB (PPM)	1.19	0.31	0.48	0.37	7.18	0.40	0.42	0.41	0.08	0.31	1.48	2.97	0.67	0.53	0.04
NI (PPM)	13.8	11.5	10.0	19.4	2.4	5.1	10.8	9.8	9.5	2.7	15.8	12.3	22.2	8.0	27.3
P (PPM)	1660	490	1040	510	60	420	1770	1060	1710	90	2160	1380	1430	1000	1530

Table D-11. Whole Rock Sample Results Summary – Intermediate Deadwood (Page 4 of 4)

SAMPLE_ID	52447	49328	66496	67361	67568	67499	67692	67478	68453	69580	69691	69924	69794	80902	50755
HOLE-ID	FX3410	FX3399	FX3834	FX3852	FX3865	FX3867	FX3858	FX3885	FX3892	FX3920	FX3922	FX3923	FX3925	FX4248	FX3381
FROM	460	120	250	300	70	80	210	70	220	210	420	220	370	200	180
TO	470	130	260	310	80	90	220	80	230	220	430	230	380	210	190
PB (PPM)	17.9	27.2	149.0	21.3	135.5	16.4	12.6	25.5	3.7	21.9	69.4	20.5	10.0	9.3	12.7
RB (PPM)	12.6	13.8	10.5	57.2	4.3	4.5	6.1	13.8	19.2	17.3	24.4	18.8	53.1	15.7	73.1
RE (PPM)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0040
ROCK_TYPE	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4
S (%)	0.01	0.08	0.02	0.03	0.09	0.59	0.50	0.05	0.02	0.02	0.02	0.01	0.04	0.01	0.49
SB (PPM)	16.15	46.50	46.30	7.95	2.16	60.20	40.60	3.01	0.70	4.47	29.00	13.95	13.15	2.56	1.33
SC (PPM)	6.7	3.6	3.0	5.8	0.5	1.6	2.7	3.2	4.7	0.7	5.4	5.3	7.3	4.0	7.3
SE (PPM)	0.5	1.0	1.0	0.5	0.3	2.4	5.1	0.5	1.8	0.4	1.0	0.6	0.8	0.6	0.7
SI (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
SN (PPM)	0.5	0.4	0.6	1.6	1.3	0.8	0.7	0.5	0.4	0.9	1.4	0.8	1.7	0.2	0.8
SR (PPM)	59.4	151.5	47.7	219.0	53.8	157.0	120.0	59.6	98.5	61.2	106.5	96.2	128.0	75.5	85.8
TA (PPM)	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.01	<0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01
TE (PPM)	0.64	<0.01	4.46	0.01	0.02	0.56	6.06	0.27	0.02	1.20	1.64	0.12	0.88	0.15	0.04
TH (PPM)	9.0	5.7	4.5	10.2	80.7	55.7	5.7	10.5	6.7	10.3	10.4	6.7	17.2	4.3	10.4
TI (%)	0.008	0.005	<0.005	0.012	0.024	<0.005	0.006	0.008	0.006	<0.005	0.012	0.010	0.013	<0.005	0.005
TL (PPM)	4.13	18.35	7.39	5.50	0.68	4.15	11.95	1.62	0.63	1.27	12.40	4.26	8.86	3.40	1.57
U (PPM)	9.03	5.24	5.10	5.91	13.20	48.00	23.30	9.76	1.19	5.10	9.05	3.84	7.41	1.14	2.02
V (PPM)	39	15	11	47	6	36	108	11	10	11	59	23	63	9	22
W (PPM)	4.78	4.72	9.09	2.92	2.98	14.30	27.60	2.70	1.22	2.16	3.73	5.33	3.51	2.80	0.43
Y (PPM)	11.15	6.94	6.48	9.87	9.92	32.90	26.10	12.45	14.15	3.93	19.55	9.93	17.70	8.79	15.75
ZN (PPM)	58	121	132	49	30	76	294	56	25	79	275	85	230	30	203
ZR (PPM)	15.5	8.6	6.7	25.9	74.6	18.1	8.0	19.1	3.8	34.5	22.5	12.2	23.4	12.4	4.3
AU_FIREOPT	0.038	NC	0.105	NC	NC	0.286	0.264	NC	NC	NC	0.109	0.012	0.015	NC	NC
AG_FIREOPT	NC	NC	0.135	NC	NC	0.282	0.083	NC	NC	NC	0.530	0.106	0.173	NC	NC

Table D-12. Whole Rock Sample Results Summary – Tertiary Porphyry or Trachyte (Page 1 of 6)

SAMPLE_ID	20040	20055	32961	34118	34128	34135	10987	10995	50415	50543	52750	67327	67618	67700	67976	68134	68220	68277	68301
HOLE-ID	1168	1168	1364	1373	1373	1373	FR-11	FR-11	FX3363	FX3365	FX3416	FX3850	FX3855	FX3859	FX3871	FX3887	FX3888	FX3889	FX3898
FROM	260	410	180	200	300	370	352	421	240	220	490	260	70	40	100	280	290	410	50
TO	270	420	190	210	310	380	362	429	250	230	500	270	80	50	110	290	300	420	60
AG_OPT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	NC	0.104	0.095	0.073	0.000	NC	0.000	0.000	0.263	0.275	0.000
AG (PPM)	0.20	0.20	0.20	0.20	0.40	0.20	1.20	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.60	0.00	6.80	0.00
AL (%)	0.17	0.18	7.52	7.45	7.39	7.59	0.17	7.69	0.60	1.52	0.35	0.18	0.28	0.55	0.31	0.67	0.19	0.62	0.36
AS (PPM)	535	313	158	336	400	236	541	<0	2780	58.3	386	235	649	125.5	554	436	295	322	411
AU_OPT	0.017	0.012	0.001	0.017	0.011	0.003	0.042	0.000	0.092	0.038	0.030	0.024	0.010	0.003	0.008	0.022	0.039	0.056	0.018
B (PPM)	NS	NS	NS	NS	NS	NS	NS	<0	9	9	5	<10	10	10	10	<10	<10	<10	<10
BA (PPM)	492	178	870	980	800	890	508	1460	710	860	620	500	1080	130	670	570	400	520	470
BE (PPM)	NS	NS	0.50	0.50	0.50	0.50	NS	3.00	0.63	1.49	1.89	0.58	0.52	2.59	0.58	0.67	0.43	0.68	1.49
BI (PPM)	3.00	3.00	2.00	2.00	2.00	2.00	3.00	2.00	0.45	0.45	0.35	0.22	1.29	0.84	1.45	0.20	0.24	0.30	1.19
CA (%)	0.01	0.01	0.12	0.04	0.03	0.06	0.04	0.10	0.37	3.43	0.70	0.04	0.06	0.40	0.08	0.06	0.09	0.10	0.09
CD (PPM)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.16	0.12	0.21	0.07	0.02	0.11	0.22	0.13	0.09	0.28	0.33
CE (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	160.5	178.5	50.8	38.3	147.5	88.2	127.5	35.0	37.4	40.7	128.0
CO (PPM)	1.0	3.0	4.0	3.0	3.0	5.0	2.0	6.0	4.2	15.2	2.4	0.4	0.3	2.2	2.2	1.8	1.3	1.5	2.4
CR (PPM)	50	54	55	73	67	66	51	37	147	218	74	2	5	7	5	7	3	5	4
CS (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	1.40	59.60	1.60	0.91	0.13	1.79	0.15	0.90	0.28	0.45	0.15
CU (PPM)	9.0	2.0	9.0	11.0	10.0	6.0	4.0	3.0	37.4	29.9	4.8	4.7	19.9	8.5	24.8	4.1	8.8	15.0	18.4
F (PPM)	NS	NS	500	220	160	140	NS	<0	0	0	0	0	0	0	0	0	0	0	0
FE (%)	0.84	0.60	0.90	0.82	0.92	0.76	0.83	0.92	3.06	2.39	1.32	0.80	0.85	1.18	0.77	1.32	0.83	1.20	1.20
GA (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	4.32	6.58	1.57	1.12	2.10	3.34	1.49	2.46	1.11	1.90	1.99
GE (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	0.22	0.22	0.07	0.10	0.12	0.10	0.11	0.07	0.09	0.07	0.11
HF (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	0.35	0.62	0.62	0.51	1.49	0.88	0.70	0.82	0.73	1.11	1.49
HG (PPM)	NS	NS	70.00	120.00	50.00	60.00	NS	<0.00	0.79	0.03	0.07	0.07	0.03	0.12	0.04	0.05	0.12	0.12	0.24
IN (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	0.037	0.025	0.007	0.006	0.006	0.012	0.006	0.009	0.007	0.008	0.005
K (%)	0.030	0.020	6.950	8.240	8.430	8.520	0.030	4.700	0.510	0.670	0.250	0.190	0.160	0.250	0.080	0.790	0.220	0.730	0.080
LA (PPM)	NS	NS	NS	NS	NS	NS	NS	<0.0	89.0	99.7	29.1	22.3	91.5	52.8	72.4	21.8	24.0	26.5	73.1
LI (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	2.4	20.5	1.2	0.3	0.9	5.4	1.1	0.7	0.5	0.4	0.9
MG (%)	0.01	0.01	0.06	0.02	0.01	0.01	0.01	0.07	0.05	1.97	0.14	0.01	0.02	0.10	0.03	0.02	0.02	0.01	0.04
MN (PPM)	36	161	730	90	145	325	219	1275	111	758	326	43	33	83	50	450	373	366	48
MO (PPM)	1.00	2.00	2.00	2.00	7.00	2.00	1.00	1.00	8.73	4.77	6.79	0.77	1.43	2.89	1.88	1.52	1.60	1.52	1.39
NA (%)	0.02	0.02	0.95	0.70	0.58	0.73	0.04	1.54	0.02	0.38	0.03	0.01	0.06	0.02	0.06	0.04	0.02	0.06	0.04
NB (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	0.92	0.72	0.30	0.19	0.79	0.50	0.78	0.20	0.37	0.23	0.83
NI (PPM)	4.0	4.0	4.0	3.0	3.0	4.0	6.0	5.0	34.3	106.0	8.6	0.9	1.7	4.4	2.6	4.0	2.1	3.3	2.5
P (PPM)	100	100	120	120	130	160	100	30	1430	1840	150	50	140	160	140	110	120	120	170

Table D-12. Whole Rock Sample Results Summary – Tertiary Porphyry or Trachyte (Page 2 of 6)

SAMPLE_ID	20040	20055	32961	34118	34128	34135	10987	10995	50415	50543	52750	67327	67618	67700	67976	68134	68220	68277	68301
HOLE-ID	1168	1168	1364	1373	1373	1373	FR-11	FR-11	FX3363	FX3365	FX3416	FX3850	FX3855	FX3859	FX3871	FX3887	FX3888	FX3889	FX3898
FROM	260	410	180	200	300	370	352	421	240	220	490	260	70	40	100	280	290	410	50
TO	270	420	190	210	310	380	362	429	250	230	500	270	80	50	110	290	300	420	60
PB (PPM)	58.0	42.0	130.0	336.0	338.0	162.0	32.0	36.0	25.2	21.5	21.3	15.1	198.5	86.8	210.0	16.7	24.7	30.1	151.0
RB (PPM)	NS	NS	420.0	460.0	460.0	440.0	NS	<0.0	23.9	39.0	14.1	8.3	4.1	14.5	3.8	43.0	8.4	29.8	3.5
RE (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	0.0010	0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
ROCK_TYPE	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
S (%)	NS	NS	NS	NS	NS	NS	NS	NS	0.19	0.15	0.04	0.05	0.17	0.04	0.03	0.05	0.02	0.03	0.03
SB (PPM)	2.00	2.00	2.60	7.60	8.00	4.00	2.00	0.00	27.70	0.67	19.70	9.25	19.25	5.69	12.65	6.17	8.20	10.25	10.15
SC (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	2.1	6.3	1.0	0.4	0.3	1.8	0.4	0.9	0.7	0.6	0.4
SE (PPM)	NS	NS	<0.2	<0.2	<0.2	<0.2	NS	NS	2.1	0.5	0.2	0.4	0.4	0.6	0.5	0.5	0.4	0.5	0.6
SI (%)	NS	NS	NS	NS	NS	NS	NS	<0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SN (PPM)	2.0	2.0	NS	NS	NS	NS	NS	<0.0	1.1	0.6	0.4	0.5	0.6	1.1	0.6	0.6	1.3	0.8	0.5
SR (PPM)	74.0	48.0	204.0	346.0	184.0	248.0	49.0	225.0	1130.0	1540.0	61.0	36.3	53.2	43.4	43.1	60.2	54.7	70.8	42.7
TA (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TE (PPM)	NS	NS	0.10	0.35	0.30	0.40	NS	0.25	4.89	0.04	0.94	0.63	0.02	0.01	0.01	0.89	4.56	3.21	<0.01
TH (PPM)	NS	NS	NS	NS	NS	NS	NS	<0.0	27.4	27.6	12.6	7.7	75.7	182.5	68.4	10.8	9.4	10.7	96.1
TI (%)	NS	NS	0.050	0.040	0.050	0.050	NS	0.060	0.009	0.114	0.004	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
TL (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	2.61	1.02	1.15	0.37	1.08	1.74	0.58	2.19	1.43	1.80	0.56
U (PPM)	5.00	5.00	NS	NS	NS	NS	NS	NS	6.00	6.03	3.52	2.29	10.05	19.45	18.35	4.27	4.55	4.57	11.65
V (PPM)	NS	NS	5	6	6	3	NS	7	32	51	10	14	7	16	14	22	107	16	23
W (PPM)	10.00	10.00	7.00	8.00	13.00	18.00	10.00	10.00	24.40	1.38	5.32	1.87	2.39	1.99	4.19	1.58	1.83	1.77	3.09
Y (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	10.15	17.85	4.70	3.92	7.07	13.00	8.13	4.45	4.17	4.60	11.20
ZN (PPM)	40	52	120	64	64	76	46	104	40	93	75	28	23	92	28	87	79	111	64
ZR (PPM)	NS	NS	NS	NS	NS	NS	NS	NS	20.0	27.8	25.1	18.3	61.7	39.4	33.0	28.8	24.9	36.4	65.3
AU_FIREOPT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	NC	0.042	0.034	0.027	0.014	NC	0.009	0.024	0.041	0.060	0.018
AG_FIREOPT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	NC	0.104	0.095	0.073	0.000	NC	0.000	0.000	0.263	0.275	0.000

Table D-12. Whole Rock Sample Results Summary – Tertiary Porphyry or Trachyte (Page 3 of 6)

SAMPLE_ID	68580	68172	68470	68686	68092	69551	68808	69349	69503	70294	69299	70017	70153	52460	52760	52909	66809	66916
HOLE-ID	FX3891	FX3903	FX3892	FX3894	FX3897	FX3914	FX3915	FX3916	FX3918	FX3932	FX3926	FX3929	FX3933	FX3411	FX3417	FX3420	FX3840	FX3842
FROM	190	260	390	380	210	420	190	310	440	370	210	300	290	90	90	80	80	0
TO	200	270	400	390	220	430	200	320	450	380	220	310	300	100	100	90	90	10
AG_OPT	0.019	0.186	0.000	0.074	0.084	NC	0.111	0.061	NC	0.000	NC	0.108	0.065	NC	NC	NC	NC	NC
AG (PPM)	0.00	3.02	1.51	2.30	0.00	0.00	0.00	0.00	0.00	0.79	0.00	2.03	1.38	0.00	0.00	0.00	0.00	0.00
AL (%)	0.36	0.47	0.32	0.34	0.36	0.20	0.44	0.20	0.29	0.30	0.19	0.28	0.34	3.09	2.21	2.93	4.72	1.78
AS (PPM)	583	395	227	230	586	215	1225	240	269	299	266	219	263	25.1	46.4	30.8	16.2	15.4
AU_OPT	0.014	0.061	0.012	0.060	0.009	0.006	0.135	0.027	0.006	0.013	0.006	0.032	0.018	0.003	0.003	0.000	0.000	0.000
B (PPM)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	5	5	10	<10
BA (PPM)	420	450	460	540	520	420	90	620	540	470	500	610	490	170	110	100	150	130
BE (PPM)	1.07	0.83	0.58	0.48	1.00	0.71	2.18	1.05	1.30	0.55	0.29	0.64	0.73	6.71	5.58	6.02	8.81	5.01
BI (PPM)	0.25	0.27	0.17	0.13	0.18	0.20	0.12	0.20	0.31	0.20	0.20	0.20	0.24	0.98	0.78	0.80	1.02	0.71
CA (%)	2.54	0.66	0.10	0.24	0.91	0.08	0.21	0.09	0.35	0.09	0.05	0.11	0.15	0.42	1.55	0.55	0.79	0.41
CD (PPM)	0.18	0.09	0.25	0.38	0.15	0.40	0.24	0.13	0.17	0.09	0.04	0.11	0.09	0.19	0.26	0.21	0.17	0.07
CE (PPM)	50.6	35.8	39.6	24.4	47.0	37.9	70.7	35.4	47.4	31.0	27.1	25.1	39.5	236.0	225.0	221.0	206.0	213.0
CO (PPM)	4.7	2.8	1.6	0.9	4.8	1.5	1.4	2.2	3.1	1.3	0.7	1.1	1.5	0.4	0.6	0.4	0.3	2.9
CR (PPM)	9	8	5	5	10	4	5	3	7	5	3	7	6	29	19	15	4	4
CS (PPM)	0.67	1.60	0.63	0.44	1.41	0.41	2.81	0.52	1.85	0.96	0.51	0.39	1.13	28.80	35.20	10.20	6.17	4.57
CU (PPM)	11.4	7.7	4.7	7.4	8.0	5.6	9.3	4.5	18.3	2.2	1.8	3.1	4.8	4.1	3.8	126.0	34.1	2.2
F (PPM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FE (%)	2.42	1.70	1.22	1.14	1.53	0.97	3.56	0.84	1.23	1.15	0.79	1.08	1.31	0.47	0.60	0.56	0.39	0.99
GA (PPM)	1.74	2.38	1.37	1.22	1.74	0.94	3.01	0.93	1.27	1.56	1.02	1.26	1.83	9.02	6.03	8.85	12.60	5.35
GE (PPM)	0.13	0.07	0.06	0.05	0.10	0.09	0.15	0.09	0.09	0.06	0.09	0.06	0.06	0.17	0.15	0.14	0.19	0.15
HF (PPM)	0.50	0.66	0.93	0.72	0.40	0.74	0.27	0.60	0.46	0.81	0.55	0.64	0.93	1.07	0.56	0.70	2.59	0.33
HG (PPM)	0.39	0.17	0.11	0.13	0.21	0.06	0.23	0.09	0.08	0.07	0.05	0.06	0.07	0.02	0.06	0.04	0.03	0.07
IN (PPM)	0.014	0.010	0.010	0.011	0.013	0.006	0.046	0.008	0.012	0.008	0.006	0.009	0.011	0.005	0.008	0.009	<0.005	0.009
K (%)	0.290	0.450	0.360	0.380	0.270	0.250	0.380	0.230	0.220	0.350	0.220	0.360	0.380	0.240	0.120	0.120	0.290	0.090
LA (PPM)	26.9	19.9	24.2	13.0	26.2	24.3	37.3	20.7	30.1	17.4	18.0	14.3	22.6	148.0	145.0	147.5	137.5	94.3
LI (PPM)	3.2	3.4	0.5	0.5	1.6	0.5	1.7	0.5	0.9	0.6	0.5	0.7	0.9	21.1	11.6	10.9	14.4	10.6
MG (%)	0.83	0.15	0.02	0.01	0.23	0.02	0.04	0.03	0.14	0.02	0.01	0.01	0.03	0.09	0.14	0.19	0.07	0.19
MN (PPM)	856	295	343	145	397	262	45	420	538	326	52	238	227	520	1020	687	644	915
MO (PPM)	1.67	1.26	1.15	1.00	1.16	0.73	2.86	0.81	1.30	0.74	0.69	1.01	0.94	3.71	2.46	1.93	3.23	1.89
NA (%)	0.03	0.03	0.03	0.02	0.02	0.02	0.01	0.02	0.01	0.03	0.01	0.02	0.02	1.48	0.96	1.43	3.33	0.13
NB (PPM)	0.48	0.27	0.34	0.22	0.28	0.42	0.46	0.30	0.24	0.18	0.29	0.14	0.26	0.90	0.63	0.53	1.59	0.53
NI (PPM)	6.4	5.6	3.6	2.5	10.3	2.9	2.4	3.3	6.2	3.3	1.4	3.9	3.9	3.6	1.3	1.7	1.6	3.8
P (PPM)	610	230	110	80	490	110	990	110	220	110	110	80	110	80	50	50	50	70

Table D-12. Whole Rock Sample Results Summary – Tertiary Porphyry or Trachyte (Page 4 of 6)

SAMPLE_ID	68580	68172	68470	68686	68092	69551	68808	69349	69503	70294	69299	70017	70153	52460	52760	52909	66809	66916
HOLE-ID	FX3891	FX3903	FX3892	FX3894	FX3897	FX3914	FX3915	FX3916	FX3918	FX3932	FX3926	FX3929	FX3933	FX3411	FX3417	FX3420	FX3840	FX3842
FROM	190	260	390	380	210	420	190	310	440	370	210	300	290	90	90	80	80	0
TO	200	270	400	390	220	430	200	320	450	380	220	310	300	100	100	90	90	10
PB (PPM)	27.1	17.5	20.8	15.1	19.5	19.8	76.1	17.1	28.7	14.4	21.8	16.6	19.9	56.1	47.7	44.7	57.5	52.7
RB (PPM)	12.2	23.5	17.2	17.1	11.7	9.5	14.6	9.1	11.8	15.8	8.9	14.8	18.9	17.6	20.2	20.4	25.4	10.9
RE (PPM)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0001	0.0001	0.0010	0.0010	<0.0010
ROCK_TYPE	6	6	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	7
S (%)	0.10	0.05	0.03	0.03	0.10	0.03	0.24	0.02	0.04	0.05	0.07	0.08	0.03	0.04	0.01	0.02	0.04	0.01
SB (PPM)	9.46	8.13	5.09	6.35	11.20	5.17	21.10	9.00	9.35	7.12	8.19	8.49	7.65	0.50	0.65	0.52	0.66	0.72
SC (PPM)	1.7	1.2	0.7	0.4	2.2	0.9	3.2	0.8	1.4	0.5	0.4	0.4	0.8	0.4	0.8	0.4	0.2	0.8
SE (PPM)	1.0	0.7	0.2	6.6	0.6	0.5	7.6	0.4	0.5	0.3	0.4	0.4	0.6	0.5	0.5	0.5	0.8	0.9
SI (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SN (PPM)	0.6	0.8	0.8	0.5	0.5	0.6	0.7	0.4	0.6	0.6	0.4	0.7	0.7	0.4	0.4	1.5	0.8	0.5
SR (PPM)	106.0	74.4	68.3	65.5	123.0	46.5	231.0	57.9	54.2	89.2	82.1	75.8	74.8	495.0	271.0	381.0	638.0	134.0
TA (PPM)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	0.01	0.01	<0.01
TE (PPM)	2.32	1.48	0.65	1.51	0.76	0.23	3.21	0.79	0.36	1.04	0.30	1.34	0.76	0.02	0.02	0.01	0.01	0.01
TH (PPM)	9.4	9.6	10.2	8.4	9.5	9.7	8.7	9.2	11.0	9.5	8.5	7.5	10.3	65.9	56.4	54.1	55.2	39.4
TI (%)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	0.004	0.004	0.018	<0.005
TL (PPM)	2.98	1.62	1.41	1.04	4.20	0.95	0.68	1.94	1.27	1.76	0.54	1.31	1.64	1.29	0.79	0.64	1.14	0.68
U (PPM)	3.42	3.83	4.92	3.58	3.61	3.58	3.42	3.31	2.97	6.23	3.17	1.97	3.91	9.60	7.20	7.64	15.75	4.22
V (PPM)	23	41	10	19	16	10	37	9	10	6	7	12	13	8	7	9	2	15
W (PPM)	4.54	2.41	1.98	1.37	3.49	1.74	4.54	2.01	2.79	2.17	2.46	1.93	2.04	0.37	0.49	0.36	0.39	0.26
Y (PPM)	6.68	4.49	4.01	3.01	5.35	4.18	5.99	4.05	5.40	3.66	2.93	2.61	4.24	26.30	22.90	21.10	27.30	12.90
ZN (PPM)	61	43	117	62	48	129	66	119	98	51	30	59	56	91	76	159	144	162
ZR (PPM)	18.2	23.1	30.3	22.6	15.5	24.7	10.4	21.8	15.8	27.7	16.5	19.9	31.0	76.4	41.3	55.3	175.5	22.6
AU_FIREOPT	0.069	0.070	0.017	0.068	0.010	NC	0.155	0.030	NC	0.015	NC	0.038	0.020	NC	NC	NC	NC	NC
AG_FIREOPT	0.019	0.186	0.000	0.074	0.084	NC	0.111	0.061	NC	0.000	NC	0.108	0.065	NC	NC	NC	NC	NC

Table D-12. Whole Rock Sample Results Summary – Tertiary Porphyry or Trachyte (Page 5 of 6)

SAMPLE_ID	31278	28238	30594	28889	29589	39375
HOLE-ID	W21R-4788	W21R-4749	W21R-4779	W21R-4758	W21R-4767	W21R-4905
FROM	110	130	160	30	20	40
TO	110	130	160	30	20	40
AG_OPT	NS	NS	NS	NS	NS	NS
AG (PPM)	0.18	0.13	0.05	0.05	0.06	0.02
AL (%)	0.25	0.26	0.22	4.18	2.93	4.58
AS (PPM)	717	440	19.6	17.9	53.1	20.3
AU_OPT	0.15	0.04	0.02	<0.02	0.03	<0.02
B (PPM)	<10	<10	<10	<10	<10	<10
BA (PPM)	870	570	510	300	290	280
BE (PPM)	0.9	0.73	1.55	7.92	4.91	8.9
BI (PPM)	1.56	1.69	1.54	0.9	0.63	0.89
CA (%)	0.07	0.03	0.06	0.28	0.28	0.59
CD (PPM)	1.39	0.15	0.09	0.48	0.14	0.18
CE (PPM)	76.9	68.8	192.5	254	166.5	240
CO (PPM)	1.7	0.6	1.2	2.1	6.3	0.5
CR (PPM)	5	12	5	5	12	4
CS (PPM)	0.45	0.19	0.89	4.93	2.4	4.88
CU (PPM)	2.9	3.2	2	9.4	28.8	3
F (PPM)	NS	NS	NS	NS	NS	NS
FE (%)	1.58	1.03	0.97	0.98	1.57	0.5
GA (PPM)	1.12	1.86	2.5	10.5	7.88	10.75
GE (PPM)	0.08	0.11	0.22	0.19	0.12	0.15
HF (PPM)	1.78	2.76	2.18	1.96	2	2.44
HG (PPM)	0.11	0.03	0.03	0.07	0.04	0.03
IN (PPM)	<0.005	0.005	<0.005	0.013	0.015	<0.005
K (%)	0.08	0.19	0.07	0.15	0.21	0.26
LA (PPM)	41.8	39.3	116	167.5	92.7	148
LI (PPM)	0.5	0.7	0.6	15.4	13.4	9.5
MG (%)	0.02	0.01	0.02	0.13	0.21	0.07
MN (PPM)	58	51	90	882	768	641
MO (PPM)	2.64	2	0.77	1.71	2.11	2.82
NA (%)	0.04	0.05	0.04	0.9	0.61	3
NB (PPM)	1.44	2.51	5.02	0.66	1.84	0.78
NI (PPM)	2.3	1.9	2.2	5.5	12.6	1.8
P (PPM)	80	70	130	170	120	80

Table D-12. Whole Rock Sample Results Summary – Tertiary Porphyry or Trachyte (Page 6 of 6)

SAMPLE_ID	31278	28238	30594	28889	29589	39375
HOLE-ID	W21R-4788	W21R-4749	W21R-4779	W21R-4758	W21R-4767	W21R-4905
FROM	110	130	160	30	20	40
TO	110	130	160	30	20	40
PB (PPM)	193.5	253	123	56.8	40.8	50.6
RB (PPM)	4.1	10.8	15.8	13.1	17	15.2
RE (PPM)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ROCK_TYPE	12	12	12	7	7	7
S (%)	0.03	0.2	0.01	<0.01	0.01	0.03
SB (PPM)	8.77	9.57	2.21	0.53	1.36	0.34
SC (PPM)	0.3	0.7	2	1.1	2	0.3
SE (PPM)	1.1	0.4	0.7	0.2	0.3	<0.2
SI (%)	NS	NS	NS	NS	NS	NS
SN (PPM)	0.3	0.6	0.7	0.6	0.5	0.3
SR (PPM)	77.3	61.8	60.8	386	186.5	800
TA (PPM)	0.01	0.03	0.12	0.02	0.02	0.01
TE (PPM)	<0.01	0.03	0.02	0.02	0.04	0.02
TH (PPM)	41.5	63.2	96.7	64.7	36.8	58.4
TI (%)	<0.005	<0.005	<0.005	0.01	0.032	0.017
TL (PPM)	0.57	3.75	0.52	1.44	0.98	1.15
U (PPM)	40.7	19.1	32.5	12.1	5.14	14.8
V (PPM)	15	16	11	17	25	3
W (PPM)	5.49	4.37	4.62	0.27	0.75	0.59
Y (PPM)	8.77	9.96	16.5	37.6	22.3	29.9
ZN (PPM)	40	17	35	124	75	119
ZR (PPM)	74.3	98.7	56.9	117	137.5	159.5
AU_FIREOPT	NS	NS	NS	NS	NS	NS
AG_FIREOPT	NS	NS	NS	NS	NS	NS

Table D-13. Meteoric Water Mobility Test Results (Page 1 of 3)

Hole ID	From	To	Lithology	Sample ID	pH (s.u.)	TDS (mg/L)	COND (µmhos/cm)	AG (mg/L)	AL (mg/L)	AS (mg/L)	BA (mg/L)	BE (mg/L)	CA (mg/L)	CD (mg/L)	CL (mg/L)	CR (mg/L)	CU (mg/L)
W21R-4804	70	80	Upper Dwd		7.2	3060	91	<0.003	—	0.015	0.3	—	9	<0.001	6	0.041	<0.01
W21R-4825	250	270	Upper Dwd		7.9	190	253	<0.003	—	0.090	<0.1	—	12	<0.001	7	0.008	<0.01
W21R-4753	150	180	Upper Dwd		8.3	180	315	<0.003	—	0.200	<0.1	—	13	<0.001	7	<0.003	<0.01
W21R-4765	190	210	Upper Dwd		8.1	170	264	<0.003	—	0.168	<0.1	—	18	<0.001	11	<0.003	<0.01
FX3361	130	140	Upper Dwd	50274	8.3	160	—	<0.01	<0.02	0.223	<0.10	<0.002	22	<0.0020	2	<0.01	<0.01
FX3367	350	360	Upper Dwd	50686	8.2	90	—	<0.01	<0.02	0.038	<0.10	<0.002	14	<0.0020	2	<0.01	<0.01
FX3413	280	290	Upper Dwd	52579	8.6	390	—	<0.01	<0.02	0.066	<0.10	<0.002	18	<0.0020	21	<0.01	<0.01
W21R-4820	20	40	Upper Dwd		8.0	210	288	<0.003	—	0.078	<0.1	—	20	<0.001	5	<0.003	<0.01
W21R-4763	80	90	Upper Dwd		7.9	70	103	<0.003	—	0.035	<0.1	—	7	<0.001	2	<0.003	<0.01
W21R-4770	30	50	Upper Dwd		8.3	160	244	<0.003	—	0.013	<0.1	—	12	<0.001	9	<0.003	<0.01
W21R-4785	110	130	Upper Dwd		7.4	100	98	<0.003	—	0.068	0.3	—	4	<0.001	2	<0.003	<0.01
W21R-4795	70	90	Upper Dwd		8.3	200	349	<0.003	—	0.093	<0.1	—	12	<0.001	31	<0.003	<0.01
W21R-4754	230	250	Intermediate Dwd		7.8	210	342	<0.003	—	<0.005	<0.1	—	19	<0.001	2	<0.003	<0.01
W21R-4776	390	410	Intermediate Dwd		7.8	140	230	<0.003	—	0.041	<0.1	—	12	<0.001	5	0.026	<0.01
W21R-4751	10–20	50–60	Intermediate Dwd		7.6	5,330	7,670	<0.003	—	0.006	1.9	—	104	<0.001	2,620	<0.003	<0.01
W21R-4769	190	210	Intermediate Dwd		8.0	120	183	<0.003	—	0.085	<0.1	—	13	<0.001	6	<0.003	<0.01
W21R-4776	310	330	Intermediate Dwd		8.0	110	155	<0.003	—	0.036	<0.1	—	7	<0.001	5	<0.003	<0.01
W21R-4779	220–230	250–260	Intermediate Dwd		7.7	260	168	<0.003	—	0.035	0.2	—	10	<0.001	10	<0.003	<0.01
W21R-4782	240	260	Intermediate Dwd		7.5	220	153	<0.003	—	0.202	0.2	—	6	<0.001	10	<0.003	<0.01
FX3351	220	230	Intermediate Dwd	49583	7.7	240	—	<0.01	<0.02	0.091	<0.10	<0.002	29	<0.0020	2	<0.01	<0.01
FX3418	130	140	Intermediate Dwd	52814	6.8	590	—	<0.01	0.11	0.006	<0.10	<0.002	96	<0.0020	1	<0.01	<0.01
W21R-4816	270	290	Intermediate Dwd		7.8	470	711	<0.003	—	<0.005	<0.1	—	31	<0.001	3	0.003	<0.01
W21R-4767	190	210	Monzonite Porphyry		7.7	140	172	<0.003	—	0.082	<0.1	—	4	<0.001	2	0.015	<0.01
W21R-4806	40	50	Monzonite Porphyry		7.8	150	222	<0.003	—	0.103	<0.1	—	13	<0.001	6	<0.003	<0.01
W21R-4812	410	430	Monzonite Porphyry		7.8	140	184	<0.003	—	0.050	0.1	—	5	<0.001	1	<0.003	<0.01
W21R-4827	70	90	Monzonite Porphyry		7.9	140	192	<0.003	—	0.042	<0.1	—	15	<0.001	4	<0.003	<0.01
W21R-4762	190	210	Monzonite Porphyry		8.0	180	224	<0.003	—	0.034	0.1	—	6	<0.001	4	<0.003	<0.01
W21R-4773	610	630	Monzonite Porphyry		8.4	390	205	<0.003	—	0.111	0.2	—	4	0.002	4	<0.003	0.04
W21R-4788	200	220	Monzonite Porphyry		8.0	180	278	<0.003	—	0.253	<0.1	—	18	<0.001	2	<0.003	<0.01
W21R-4790	10	30	Monzonite Porphyry		7.7	460	309	<0.003	—	0.183	0.4	—	9	<0.001	29	<0.003	0.01
W21R-4797	330	320	Monzonite Porphyry		8.5	1,490	215	<0.003	—	0.038	0.2	—	3	<0.001	10	<0.003	<0.01
W21R-4768	300	320	Monzonite Porphyry		8.1	140	202	<0.003	—	0.036	0.1	—	7	<0.001	3	<0.003	<0.01
FX3362	240	250	Monzonite Porphyry	50350	8.4	160	—	<0.01	<0.02	0.406	<0.10	<0.002	16	<0.0020	1	<0.01	<0.01
FX3371	330	340	Monzonite Porphyry	50944	8.4	110	—	<0.01	<0.02	0.036	<0.10	<0.002	9	<0.0020	<1.00	<0.01	<0.01
FX3383	240	250	Monzonite Porphyry	51635	8.1	350	—	<0.01	<0.02	<0.005	<0.10	<0.002	20	<0.0020	5	<0.01	<0.01
W21R-4813	10	20	Phonolite Porphyry		7.3	200	286	<0.003	—	<0.005	0.1	—	11	<0.001	11	<0.003	<0.01
FX3416	100	110	Phonolite Porphyry	52711	8.0	290	—	<0.01	0.05	0.009	<0.10	<0.002	32	<0.0020	5	<0.01	<0.01

Table D-13. Meteoric Water Mobility Test Results (Page 2 of 3)

Hole ID	From	To	Lithology	Sample ID	FE (mg/L)	FL (mg/L)	HG (mg/L)	K (mg/L)	MG (mg/L)	MN (mg/L)	N (mg/L)	NA (mg/L)	NI (mg/L)	PB (mg/L)	SB (mg/L)	SE (mg/L)	TL (mg/L)
W21R-4804	70	80	Upper Dwd		—	1.6	<0.001	4	2	—	0.2	8	—	0.006	—	<0.005	-
W21R-4825	250	270	Upper Dwd		—	2.4	<0.001	9	5	—	<0.1	18	—	<0.001	—	<0.005	-
W21R-4753	150	180	Upper Dwd		—	2.7	<0.001	18	14	—	<0.1	15	—	<0.001	—	<0.005	-
W21R-4765	190	210	Upper Dwd		—	3.6	<0.001	15	4	—	<0.1	21	—	<0.001	—	<0.005	-
FX3361	130	140	Upper Dwd	50274	<0.02	5.3	<0.001	23	3	<0.01	<0.10	7	<0.01	<0.002	0.003	<0.005	<0.001
FX3367	350	360	Upper Dwd	50686	<0.02	2	<0.001	9	2	<0.01	<0.10	10	<0.01	<0.002	<0.003	<0.005	<0.001
FX3413	280	290	Upper Dwd	52579	<0.02	5.3	<0.001	39	25	<0.01	0.1	43	<0.01	<0.002	<0.003	0.006	<0.001
W21R-4820	20	40	Upper Dwd		—	1.4	<0.001	7	10	—	<0.1	15	—	<0.001	—	<0.005	-
W21R-4763	80	90	Upper Dwd		—	0.7	<0.001	4	2	—	<0.1	4	—	<0.001	—	<0.005	-
W21R-4770	30	50	Upper Dwd		—	2.0	<0.001	15	7	—	<0.1	18	—	<0.001	—	<0.005	-
W21R-4785	110	130	Upper Dwd		—	0.9	<0.001	4	<1	—	<0.1	7	—	<0.001	—	<0.005	-
W21R-4795	70	90	Upper Dwd		—	1.8	<0.001	14	13	—	<0.1	28	—	<0.001	—	<0.005	-
W21R-4754	230	250	Intermediate Dwd		—	1.3	<0.001	20	17	—	<0.1	5	—	<0.001	—	<0.005	-
W21R-4776	390	410	Intermediate Dwd		—	1.8	<0.001	9	4	—	<0.1	18	—	0.006	—	<0.005	-
W21R-4751	10–20	50–60	Intermediate Dwd		—	0.9	<0.001	22	35	—	<0.1	1,410	—	<0.001	—	<0.005	-
W21R-4769	190	210	Intermediate Dwd		—	2.1	<0.001	7	3	—	<0.1	9	—	<0.001	—	<0.005	-
W21R-4776	310	330	Intermediate Dwd		—	0.8	<0.001	5	2	—	<0.1	15	—	<0.001	—	<0.005	-
W21R-4779	220–230	250–260	Intermediate Dwd		—	0.8	<0.001	17	4	—	<0.1	12	—	<0.001	—	<0.005	-
W21R-4782	240	260	Intermediate Dwd		—	2.0	<0.001	5	1	—	<0.1	13	—	<0.001	—	<0.005	-
FX3351	220	230	Intermediate Dwd	49583	<0.02	6.5	<0.001	12	4	0.03	<0.10	24	<0.01	<0.002	0.005	0.006	0.002
FX3418	130	140	Intermediate Dwd	52814	<0.02	0.5	<0.001	14	19	0.64	<0.10	21	0.1	<0.002	<0.003	0.007	<0.001
W21R-4816	270	290	Intermediate Dwd		—	1.3	<0.001	26	37	—	<0.1	5	—	<0.001	—	<0.005	-
W21R-4767	190	210	Monzonite Porphyry		—	1.1	<0.001	4	1	—	0.2	17	—	0.001	—	<0.005	-
W21R-4806	40	50	Monzonite Porphyry		—	2.6	<0.001	20	3	—	0.1	12	—	<0.001	—	<0.005	-
W21R-4812	410	430	Monzonite Porphyry		—	1.9	<0.001	6	3	—	0.2	19	—	<0.001	—	<0.005	-
W21R-4827	70	90	Monzonite Porphyry		—	1.8	<0.001	5	2	—	<0.1	14	—	<0.001	—	<0.005	-
W21R-4762	190	210	Monzonite Porphyry		—	1.7	<0.001	10	3	—	<0.1	31	—	0.003	—	<0.005	-
W21R-4773	610	630	Monzonite Porphyry		—	1.7	<0.001	23	2	—	<0.1	21	—	0.001	—	<0.005	-
W21R-4788	200	220	Monzonite Porphyry		—	3.9	<0.001	4	2	—	<0.1	30	—	<0.001	—	<0.005	-
W21R-4790	10	30	Monzonite Porphyry		—	1.8	<0.001	13	3	—	<0.1	36	—	0.008	—	<0.005	-
W21R-4797	330	320	Monzonite Porphyry		—	0.7	<0.001	9	<1	—	<0.1	38	—	0.004	—	<0.005	-
W21R-4768	300	320	Monzonite Porphyry		—	1.6	<0.001	10	2	—	<0.1	23	—	0.001	—	<0.005	-
FX3362	240	250	Monzonite Porphyry	50350	<0.02	2.3	<0.001	9	5	<0.01	<0.10	22	<0.01	<0.002	0.003	<0.005	<0.001
FX3371	330	340	Monzonite Porphyry	50944	<0.02	4.4	<0.001	8	5	<0.01	0.1	23	<0.01	<0.002	<0.003	<0.005	<0.001
FX3383	240	250	Monzonite Porphyry	51635	<0.02	20.5	<0.001	23	6	0.57	0.2	72	<0.01	<0.002	<0.003	<0.005	<0.001
W21R-4813	10	20	Phonolite Porphyry		—	1.2	<0.001	2	3	—	<0.1	35	—	<0.001	—	<0.005	-
FX3416	100	110	Phonolite Porphyry	52711	<0.02	5.9	<0.001	5	5	0.02	0.1	40	<0.01	<0.002	<0.003	<0.005	<0.001

Table D-13. Meteoric Water Mobility Test Results (Page 3 of 3)

Hole ID	From	To	Lithology	Sample ID	ZN (mg/L)	BICARB (mg/L)	CARB (mg/L)	TOT_ALK (mg/L)	WAD (mg/L)	NH3 (mg/L)	SO4 (mg/L)	CAT_SUM (meg/L)	AN_SUM (meg/L)	CAT_AN (meg/L)	CAT_AN DIF (meg/L)
W21R-4804	70	80	Upper Dwd		—	21	<5	17	<0.01	<0.1	8	—	—	—	—
W21R-4825	250	270	Upper Dwd		—	102	<5	84	<0.01	<0.1	22	—	—	—	—
W21R-4753	150	180	Upper Dwd		—	104	<5	86	<0.01	<0.1	38	—	—	—	—
W21R-4765	190	210	Upper Dwd		—	99	<5	81	<0.01	<0.1	17	—	—	—	—
FX3361	130	140	Upper Dwd	50274	<0.01	90	—	74	<0.01	—	21	2.23	2.23	0	0.01
FX3367	350	360	Upper Dwd	50686	<0.01	71	—	58	<0.01	—	10	1.54	1.52	0	0.01
FX3413	280	290	Upper Dwd	52579	<0.01	182	—	165	<0.01	—	84	5.79	5.91	0.97	0
W21R-4820	20	40	Upper Dwd		—	119	<5	98	<0.01	<0.1	35	—	—	—	—
W21R-4763	80	90	Upper Dwd		—	45	<5	37	<0.01	<0.1	4	—	—	—	—
W21R-4770	30	50	Upper Dwd		—	104	<5	85	<0.01	<0.1	10	—	—	—	—
W21R-4785	110	130	Upper Dwd		—	18	<5	15	<0.01	<0.1	16	—	—	—	—
W21R-4795	70	90	Upper Dwd		—	100	<5	83	<0.01	<0.1	21	—	—	—	—
W21R-4754	230	250	Intermediate Dwd		—	59	<5	49	<0.01	<0.1	100	—	—	—	—
W21R-4776	390	410	Intermediate Dwd		—	69	<5	56	<0.01	<0.1	37	—	—	—	—
W21R-4751	10-20	50-60	Intermediate Dwd		—	33	<5	27	<0.01	<0.1	43	—	—	—	—
W21R-4769	190	210	Intermediate Dwd		—	72	<5	59	<0.01	<0.1	9	—	—	—	—
W21R-4776	310	330	Intermediate Dwd		—	64	<5	53	<0.01	<0.1	11	—	—	—	—
W21R-4779	220–230	250–260	Intermediate Dwd		—	79	<5	65	<0.01	<0.1	4	—	—	—	—
W21R-4782	240	260	Intermediate Dwd		—	28	<5	23	<0.01	<0.1	19	—	—	—	—
FX3351	220	230	Intermediate Dwd	49583	<0.01	106	—	87	<0.01	—	56	3.1	3.29	2.9	0
FX3418	130	140	Intermediate Dwd	52814	0.06	5	—	<5.00	<0.01	—	369	7.65	7.74	0.57	0
W21R-4816	270	290	Intermediate Dwd		—	64	<5	53	<0.01	<0.1	256	—	—	—	—
W21R-4767	190	210	Monzonite Porphyry		—	59	<5	48	<0.01	<0.1	24	—	—	—	—
W21R-4806	40	50	Monzonite Porphyry		—	71	<5	58	<0.01	<0.1	26	—	—	—	—
W21R-4812	410	430	Monzonite Porphyry		—	69	<5	57	<0.01	<0.1	22	—	—	—	—
W21R-4827	70	90	Monzonite Porphyry		—	84	<5	69	<0.01	<0.1	13	—	—	—	—
W21R-4762	190	210	Monzonite Porphyry		—	75	<5	62	<0.01	<0.1	28	—	—	—	—
W21R-4773	610	630	Monzonite Porphyry		—	68	<5	57	<0.01	0.1	20	—	—	—	—
W21R-4788	200	220	Monzonite Porphyry		—	87	<5	72	<0.01	<0.1	42	—	—	—	—
W21R-4790	10	30	Monzonite Porphyry		—	42	<5	35	<0.01	<0.1	45	—	—	—	—
W21R-4797	330	320	Monzonite Porphyry		—	81	<5	68	<0.01	<0.1	21	—	—	—	—
W21R-4768	300	320	Monzonite Porphyry		—	59	<5	49	<0.01	<0.1	29	—	—	—	—
FX3362	240	250	Monzonite Porphyry	50350	<0.01	75	—	63	<0.01	—	33	2.36	2.1	0	0.26
FX3371	330	340	Monzonite Porphyry	50944	<0.01	95	—	80	<0.01	—	8	2.1	1.99	0	0.11
FX3383	240	250	Monzonite Porphyry	51635	<0.01	61	—	50	<0.01	—	131	5.13	4.95	1.8	0
W21R-4813	10	20	Phonolite Porphyry		—	26	<5	21	<0.01	<0.1	76	—	—	—	—
FX3416	100	110	Phonolite Porphyry	52711	<0.01	90	—	74	<0.01	—	91	3.88	3.84	0.55	0

Table D-14. Humidity Cell Test Results for Sample 67499 (Hold ID: FX3867) (Page 1 of 4)

Hole ID	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867
Sample ID	67499-0	67499-1	67499-2	67499-3	67499-4	67499-5	67499-6	67499-7	67499-8	67499-9	67499-10	67499-11	67499-12
Date Sampled	7/13/2011	7/20/2011	7/27/2011	8/3/2011	8/10/2011	8/17/2011	8/24/2011	8/31/2011	9/7/2011	9/14/2011	9/21/2011	9/28/2011	10/5/2011
Sample Preparation													
Total Volume In	500	500	500	500	500	500	500	500	500	500	500	500	500
Total Volume Out	450	495	500	500	490	450	460	460	430	450	460	445	410
Physical Tests													
Conductivity (uS/cm)	350	222	143	112	88.1	83.6	75.5	69.5	63.8	60.9	57.0	48.6	55.5
pH	7.54	7.69	7.73	7.69	7.68	7.74	7.72	7.69	7.66	7.67	7.63	7.67	7.70
Anions and Nutrients													
Acidity (as CaCO3)	3.5	5.1	3.5	2.3	2.3	2.9	3.6	2.9	4.9	2.6	2.5	4.2	4.9
Alkalinity, Total (as CaCO3)	19.1	30.6	29.7	26.5	21.6	24.2	21.7	22.0	20.0	20.2	18.4	16.5	20.5
Sulfate (SO4)	146	67.1	32.6	23.3	18.3	14.2	13.4	10.9	9.10	7.85	7.72	5.98	7.23
Dissolved Metals (mg/L)													
Aluminum (Al)	0.065	0.089	0.246	0.107	1.640	0.798	1.020	0.352	0.158	1.080	0.836	0.365	1.710
Antimony (Sb)	0.0027	0.0042	0.0051	0.0052	0.0055	0.0056	0.0059	0.0054	0.0050	0.0048	0.0045	0.0037	0.0054
Arsenic (As)	0.0142	0.0243	0.0347	0.0382	0.0791	0.0700	0.0863	0.0617	0.0550	0.0718	0.0666	0.0565	0.1020
Barium (Ba)	0.0586	0.0594	0.0829	0.0886	0.1380	0.1270	0.1460	0.1510	0.1640	0.1780	0.1940	0.1740	0.2090
Beryllium (Be)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00050	<0.0050	<0.0050	<0.0050	<0.0050
Bismuth (Bi)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00050	<0.0050	<0.0050	<0.0050	<0.0050
Boron (B)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.000050	<0.00050	<0.00050	<0.00050	<0.00050
Calcium (Ca)	39.50	22.30	13.60	10.50	8.53	8.32	7.62	7.41	6.67	6.65	6.15	5.50	6.01

Table D-14. Humidity Cell Test Results for Sample 67499 (Hold ID: FX3867) (Page 2 of 4)

Hole ID	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867
Sample ID	67499-0	67499-1	67499-2	67499-3	67499-4	67499-5	67499-6	67499-7	67499-8	67499-9	67499-10	67499-11	67499-12
Date Sampled	7/13/2011	7/20/2011	7/27/2011	8/3/2011	8/10/2011	8/17/2011	8/24/2011	8/31/2011	9/7/2011	9/14/2011	9/21/2011	9/28/2011	10/5/2011
Chromium (Cr)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt (Co)	0.0019	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0003	<0.0010	<0.0010	<0.0010	<0.0010
Copper (Cu)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.00096	<0.0050	<0.0050	<0.0050	<0.0050
Iron (Fe)	0.032	0.046	0.108	0.049	0.505	0.334	0.508	0.232	0.079	0.583	0.398	0.191	0.679
Lead (Pb)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.000069	<0.00050	<0.00050	<0.00050	<0.00050
Lithium (Li)	0.016	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Magnesium (Mg)	7.50	4.93	3.07	2.29	1.89	1.88	1.74	1.63	1.50	1.49	1.45	1.24	1.56
Manganese (Mn)	0.283	0.174	0.104	0.077	0.054	0.053	0.047	0.043	0.043	0.039	0.041	0.031	0.039
Mercury (Hg)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Molybdenum (Mo)	0.0124	0.0175	0.0205	0.0215	0.0184	0.0186	0.0181	0.0165	0.0144	0.0114	0.0110	0.0083	0.0098
Nickel (Ni)	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0009	<0.0050	<0.0050	<0.0050	<0.0050
Phosphorus (P)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)	20.2	14.8	11.0	08.7	07.4	06.7	06.3	05.4	04.7	04.4	04.1	03.4	04.4
Selenium (Se)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010
Silicon (Si)	8.66	11.60	12.50	12.20	14.80	13.90	15.00	13.70	12.80	15.20	13.60	11.10	14.50
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	7.56	4.76	2.65	1.79	1.29	1.06	0.89	0.74	0.67	0.52	<0.50	<0.50	<0.50
Strontium (Sr)	0.139	0.103	0.077	0.067	0.061	0.059	0.057	0.055	0.054	0.052	0.049	0.040	0.052
Thallium (Tl)	0.0044	0.0035	0.0027	0.0024	0.0021	0.0019	0.0019	0.0016	0.0015	0.0015	0.0014	0.0011	0.0014
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.010	<0.010	<0.010	<0.010	0.03	0.021	0.032	0.011	<0.010	0.038	0.024	0.011	0.04
Uranium (U)	0.00541	0.00941	0.00594	0.00502	0.00436	0.00413	0.00381	0.00314	0.00253	0.00347	0.00283	0.00185	0.00365
Vanadium (V)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010
Zinc (Zn)	0.0100	0.0067	0.0083	0.0098	0.0080	0.0052	0.0076	<0.0050	<0.0050	0.0065	<0.0050	<0.0050	0.0095

Table D-14. Humidity Cell Test Results for Sample 67499 (Hold ID: FX3867) (Page 3 of 4)

Hole ID	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867
Sample ID	67499-13	67499-14	67499-15	67499-16	67499-17	67499-18	67499-19	67499-20	67499-21	67499-22	67499-23	67499-24	67499-25
Date Sampled	10/12/2011	10/19/2011	10/26/2011	11/2/2011	11/9/2011	11/16/2011	11/23/2011	11/30/2011	12/7/2011	12/14/2011	12/21/2011	12/28/2011	1/4/2012
Sample Preparation													
Total Volume In	500	500	500	500	500	500	500	500	500	500	500	500	500
Total Volume Out	460	475	500	410	450	500	425	475	475	450	450	485	445
Physical Tests													
Conductivity (uS/cm)	51.1	46.6	50.6	45.7	43.4	43.5	38.2	40.5	37.2	37.3	40.4	38.8	38.4
pH	7.78	7.60	7.80	7.67	7.61	7.51	7.60	7.63	7.65	7.48	7.66	7.75	7.74
Anions and Nutrients													
Acidity (as CaCO3)	2.9	3.2	4.7	3.2	2.1	5.4	3.4	5.1	2.6	2.2	5.4	3.1	2.9
Alkalinity, Total (as CaCO3)	18.8	16.9	16.8	16.2	14.9	14.7	12.3	14.2	12.6	13.2	14.5	13.0	13.7
Sulfate (SO4)	5.59	4.90	5.49	5.22	5.40	4.81	4.40	4.04	4.63	3.82	4.03	3.17	4.34
Dissolved Metals (mg/L)													
Aluminum (Al)	0.362	0.834	1.12	0.520	1.28	0.188	0.614	0.191	0.769	0.357	0.797	0.421	1.02
Antimony (Sb)	0.0040	0.0035	0.0044	0.0040	0.0043	0.0040	0.0039	0.0033	0.0032	0.0034	0.0039	0.0035	0.0033
Arsenic (As)	0.0553	0.0669	0.0764	0.0633	0.0939	0.0586	0.0725	0.0512	0.0583	0.0577	0.0749	0.0577	0.0638
Barium (Ba)	0.183	0.198	0.204	0.205	0.207	0.206	0.205	0.231	0.207	0.221	0.220	0.218	0.229
Beryllium (Be)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Bismuth (Bi)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boron (B)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Calcium (Ca)	5.76	5.27	5.46	5.04	5.21	5.01	4.36	4.48	4.12	4.26	4.40	4.18	4.09

Table 8. Humidity Cell Test Results for Sample 67499 (Hold ID: FX3867) (Page 4 of 4)

Hole ID	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867	FX3867
Sample ID	67499-13	67499-14	67499-15	67499-16	67499-17	67499-18	67499-19	67499-20	67499-21	67499-22	67499-23	67499-24	67499-25
Date Sampled	10/12/2011	10/19/2011	10/26/2011	11/2/2011	11/9/2011	11/16/2011	11/23/2011	11/30/2011	12/7/2011	12/14/2011	12/21/2011	12/28/2011	1/4/2012
Chromium (Cr)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt (Co)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Copper (Cu)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Iron (Fe)	0.169	0.425	0.498	0.299	0.287	0.062	0.496	0.109	0.374	0.197	0.405	0.245	0.595
Lead (Pb)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Lithium (Li)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Magnesium (Mg)	1.34	1.22	1.27	1.16	1.20	1.06	0.999	1.03	0.935	0.938	1.04	0.965	0.970
Manganese (Mn)	0.0338	0.0329	0.0357	0.0320	0.0349	0.0286	0.0266	0.0297	0.0262	0.0257	0.0282	0.0257	0.0281
Mercury (Hg)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Molybdenum (Mo)	0.00831	0.00654	0.00772	0.00687	0.00571	0.00667	0.00540	0.00478	0.00435	0.00438	0.00420	0.00393	0.00347
Nickel (Ni)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phosphorus (P)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)	3.20	2.94	3.29	2.86	3.00	2.56	2.39	2.26	2.05	2.09	2.35	2.11	2.00
Selenium (Se)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silicon (Si)	12.0	11.9	13.6	12.2	11.7	11.8	12.4	11.3	11.4	11.0	11.9	11.5	12.4
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium (Sr)	0.0439	0.0406	0.0444	0.0415	0.0423	0.0387	0.0349	0.0347	0.0339	0.0346	0.0369	0.0337	0.0332
Thallium (Tl)	0.0010	<0.0010	0.0011	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	0.010	0.022	0.029	0.017	<0.010	<0.010	0.027	<0.010	0.021	0.011	0.023	0.014	0.030
Uranium (U)	0.00208	0.00206	0.00250	0.00192	0.00266	0.00154	0.00179	0.00128	0.00135	0.00144	0.00197	0.00146	0.00166
Vanadium (V)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Zinc (Zn)	<0.0050	0.0054	0.0073	0.0083	0.0120	<0.0050	0.0074	<0.0050	0.0055	<0.0050	0.0063	<0.0050	0.0065

Table D-15. Humidity Cell Test Results for Sample 67550 (Hold ID: FX3869) (Page 1 of 4)

Hole ID	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869
Sample ID	67550-0	67550-1	67550-2	67550-3	67550-4	67550-5	67550-6	67550-7	67550-8	67550-9	67550-10	67550-11	67550-12
Date Sampled	7/20/2011	7/27/2011	8/3/2011	8/10/2011	8/17/2011	8/24/2011	8/31/2011	9/7/2011	9/14/2011	9/21/2011	9/28/2011	10/5/2011	10/12/2011
Sample Preparation													
Total Volume In	500	500	500	500	500	500	500	500	500	500	500	500	500
Total Volume Out	475	440	500	500	500	475	450	445	500	450	475	450	425
Physical Tests													
Conductivity (uS/cm)	263	166	125	96.3	76.0	64.6	56.6	51.2	49.2	42.8	42.6	39.3	36.8
pH	7.35	7.47	7.53	7.43	7.44	7.39	7.38	7.31	7.34	7.32	7.32	7.28	7.20
Anions and Nutrients													
Acidity (as CaCO3)	4.0	4.8	3.6	2.2	1.9	3.3	3.6	3.3	4.5	2.1	1.5	2.5	4.2
Alkalinity, Total (as CaCO3)	13.3	18.4	16.2	11.5	10.1	8.6	7.8	8.1	7.6	7.4	6.5	7.1	7.4
Sulfate (SO4)	96.8	45.1	34.2	30.8	21.1	18.2	15.7	14.3	12.3	11.1	10.1	8.76	9.16
Dissolved Metals (mg/L)													
Aluminum (Al)	0.079	0.256	0.686	0.143	1.030	0.632	0.881	0.120	0.338	0.972	0.336	0.753	1.540
Antimony (Sb)	<0.0010	0.0013	0.0015	0.0016	0.0018	0.0017	0.0018	0.0016	0.00167	0.0015	0.0015	0.0014	0.0017
Arsenic (As)	0.0036	0.0051	0.0103	0.0057	0.0187	0.0140	0.0165	0.0068	0.0098	0.0137	0.0089	0.0120	0.0247
Barium (Ba)	0.0540	0.0619	0.0843	0.0735	0.1320	0.1190	0.1410	0.1420	0.1510	0.1750	0.1850	0.1760	0.2220
Beryllium (Be)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00050	<0.0050	<0.0050	<0.0050	<0.0050
Bismuth (Bi)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00050	<0.0050	<0.0050	<0.0050	<0.0050
Boron (B)	1.66	0.81	0.52	0.36	0.23	0.17	0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.000050	<0.00050	<0.00050	<0.00050	<0.00050
Calcium (Ca)	12.80	8.04	5.88	4.47	3.86	3.35	2.99	2.86	2.78	2.62	2.57	2.52	2.40

Table D-15. Humidity Cell Test Results for Sample 67550 (Hold ID: FX3869) (Page 2 of 4)

Hole ID	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869
Sample ID	67550-0	67550-1	67550-2	67550-3	67550-4	67550-5	67550-6	67550-7	67550-8	67550-9	67550-10	67550-11	67550-12
Date Sampled	7/20/2011	7/27/2011	8/3/2011	8/10/2011	8/17/2011	8/24/2011	8/31/2011	9/7/2011	9/14/2011	9/21/2011	9/28/2011	10/5/2011	10/12/2011
Chromium (Cr)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt (Co)	0.0036	0.0020	0.0017	0.0013	0.0010	<0.0010	<0.0010	<0.0010	0.0007	<0.0010	<0.0010	<0.0010	<0.0010
Copper (Cu)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0007	<0.0050	<0.0050	<0.0050	<0.0050
Iron (Fe)	0.033	0.101	0.307	0.066	0.358	0.311	0.452	0.075	0.171	0.538	0.180	0.374	0.672
Lead (Pb)	<0.00050	<0.00050	0.00098	<0.00050	0.00178	0.00107	0.00137	<0.00050	0.000602	0.00121	<0.00050	0.00084	0.00246
Lithium (Li)	0.033	0.020	0.014	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Magnesium (Mg)	2.71	1.81	1.51	1.06	0.94	0.80	0.74	0.66	0.64	0.61	0.60	0.56	0.68
Manganese (Mn)	0.155	0.105	0.084	0.064	0.049	0.044	0.039	0.036	0.037	0.034	0.034	0.032	0.034
Mercury (Hg)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Molybdenum (Mo)	0.0103	0.0254	0.0207	0.0245	0.0211	0.0212	0.0193	0.0177	0.0165	0.0127	0.0133	0.0118	0.0095
Nickel (Ni)	0.0062	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0014	<0.0050	<0.0050	<0.0050	<0.0050
Phosphorus (P)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)	11.2	08.5	07.6	06.0	05.5	04.8	04.4	03.8	03.7	03.4	03.3	03.1	03.5
Selenium (Se)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010
Silicon (Si)	5.72	8.07	9.79	9.40	10.80	10.70	11.30	9.97	10.50	11.50	10.20	10.70	11.20
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	25.9	16.3	11.5	07.4	05.7	04.7	04.0	03.4	03.3	02.4	02.4	02.2	01.9
Strontium (Sr)	0.167	0.123	0.092	0.073	0.066	0.057	0.052	0.050	0.053	0.047	0.047	0.043	0.046
Thallium (Tl)	0.0019	0.0015	0.0013	0.0011	0.0011	<0.0010	<0.0010	<0.0010	0.0008	<0.0010	<0.0010	<0.0010	<0.0010
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.010	<0.010	0.013	<0.010	<0.010	0.01	0.015	<0.010	<0.010	0.017	<0.010	0.012	0.021
Uranium (U)	0.00156	0.00217	0.00198	0.00132	0.00166	0.00121	0.00130	0.00082	0.00098	0.00114	0.00093	0.00099	0.00153
Vanadium (V)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010
Zinc (Zn)	0.0468	0.0314	0.0343	0.0259	0.0266	0.0237	0.0255	0.0200	0.0213	0.0233	0.0208	0.0250	0.0282

Table D-15. Humidity Cell Test Results for Sample 67550 (Hold ID: FX3869) (Page 3of 4)

Hole ID	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869
Sample ID	67550-13	67550-14	67550-15	67550-16	67550-17	67550-18	67550-19	67550-20	67550-21	67550-22	67550-23	67550-24	67550-25
Date Sampled	10/19/2011	10/26/2011	11/2/2011	11/9/2011	11/16/2011	11/23/2011	11/30/2011	12/7/2011	12/14/2011	12/21/2011	12/28/2011	1/4/2012	1/4/2012
Sample Preparation													
Total Volume In	500	500	500	500	500	500	500	500	500	500	500	500	500
Total Volume Out	500	480	500	425	500	500	450	485	400	425	480	450	435
Physical Tests													
Conductivity (uS/cm)	33.9	30.9	35.0	32.0	30.0	28.7	28.0	7.1	26.7	25.5	27.0	27.5	25.9
pH	7.39	7.19	7.37	7.32	7.31	7.37	7.25	7.33	7.17	7.18	7.28	7.10	7.17
Anions and Nutrients													
Acidity (as CaCO3)	3.6	3.3	4.2	2.7	1.6	3.8	2.1	4.1	2.7	1.4	4.0	3.2	4.4
Alkalinity, Total (as CaCO3)	7.1	6.7	6.8	6.1	6.2	4.8	5.3	5.2	4.3	4.5	5.0	4.7	4.6
Sulfate (SO4)	6.70	6.12	7.05	6.70	5.85	5.98	5.71	5.49	6.55	5.33	5.10	4.88	5.52
Dissolved Metals (mg/L)													
Aluminum (Al)	0.776	0.724	0.143	0.498	0.662	0.152	0.324	0.274	0.888	0.294	0.467	0.290	0.187
Antimony (Sb)	0.0012	0.0011	0.0014	0.0013	0.0013	0.0012	0.0012	0.0012	0.0011	0.0011	0.0012	0.0011	0.0011
Arsenic (As)	0.0095	0.0115	0.0079	0.0113	0.0125	0.0081	0.0093	0.0082	0.0105	0.0089	0.0113	0.0087	0.0077
Barium (Ba)	0.184	0.214	0.179	0.193	0.192	0.174	0.191	0.201	0.191	0.184	0.171	0.192	0.182
Beryllium (Be)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Bismuth (Bi)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boron (B)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Calcium (Ca)	2.21	2.09	2.29	2.14	2.19	1.93	1.92	1.82	1.84	1.72	1.82	1.83	1.68

Table D-15. Humidity Cell Test Results for Sample 67550 (Hold ID: FX3869) (Page 4 of 4)

Hole ID	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869	FX3869
Sample ID	67550-0	67550-1	67550-2	67550-3	67550-4	67550-5	67550-6	67550-7	67550-8	67550-9	67550-10	67550-11	67550-12
Date Sampled	7/20/2011	7/27/2011	8/3/2011	8/10/2011	8/17/2011	8/24/2011	8/31/2011	9/7/2011	9/14/2011	9/21/2011	9/28/2011	10/5/2011	10/12/2011
Chromium (Cr)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt (Co)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Copper (Cu)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Iron (Fe)	0.338	0.360	0.061	0.267	0.205	0.056	0.185	0.159	0.399	0.142	0.261	0.141	0.100
Lead (Pb)	0.00073	0.00098	<0.00050	0.00076	0.00097	<0.00050	<0.00050	<0.00050	0.00080	<0.00050	0.00078	<0.00050	<0.00050
Lithium (Li)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Magnesium (Mg)	0.514	0.504	0.505	0.503	0.526	0.412	0.431	0.439	0.422	0.387	0.423	0.422	0.402
Manganese (Mn)	0.0292	0.0287	0.0289	0.0280	0.0276	0.0236	0.0229	0.0247	0.0221	0.0194	0.0213	0.0221	0.0218
Mercury (Hg)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Molybdenum (Mo)	0.00845	0.00687	0.00975	0.00821	0.00684	0.00789	0.00692	0.00627	0.00636	0.00587	0.00589	0.00556	0.00540
Nickel (Ni)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phosphorus (P)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)	2.64	2.55	2.72	2.62	2.47	2.23	2.17	2.11	2.00	1.95	2.10	2.04	1.94
Selenium (Se)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silicon (Si)	9.43	8.79	9.77	9.88	9.06	8.53	9.33	8.62	9.90	8.20	8.96	8.91	8.20
Silver (Ag)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium (Na)	1.59	1.42	1.68	1.42	1.31	1.24	1.09	1.04	1.00	0.94	0.99	0.98	0.89
Strontium (Sr)	0.0395	0.0373	0.0418	0.0400	0.0387	0.0350	0.0354	0.0365	0.0354	0.0325	0.0337	0.0330	0.0321
Thallium (Tl)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Tin (Sn)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium (Ti)	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.013	<0.010	<0.010	<0.010	<0.010
Uranium (U)	0.00082	0.00086	0.00068	0.00075	0.00074	0.00055	0.00058	0.00052	0.00065	0.00049	0.00065	0.00050	0.00042
Vanadium (V)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Zinc (Zn)	0.0198	0.0207	0.0181	0.0223	0.0239	0.0170	0.0195	0.0186	0.0213	0.0168	0.0196	0.0177	0.0165

Table D-16. Humidity Cell Test Results for W21R-4748 160-180 (HC-1) (Page 1 of 2)

Date	Week No.	Vol.	pH	Redox '(vs Ag/AgCl)	EC	Acidity ('CaCO ₃ Equivalents)	Alkalinity ('CaCO ₃ Equivalents)	Total Iron	Fe ²⁺	Fe ³⁺	SO ₄ ⁼	Ca	Mg
		L.	stu	mV	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
08/10/2021	0	1.4444	7.61	323.11	204	3	25.56	0.114	0	0.114	27.561	14.2	3.46
08/17/2021	1	0.9859	7.89	299.75	142	0	40.5	0	0	0	16.13	10.5	2.37
08/24/2021	2	0.7891	7.5	273.96	75	0	14.4	0.657	0	0.657	15.38	3.96	0.92
08/31/2021	3	0.9356	7.46	199.87	66.5	0	14.47	0.337	0	0.337	10.439	4.4	1.04
09/07/2021	4	0.9769	7.47	239.44	72.3	0	18.88	0.207	0	0.207	10.731	5.5	1.32
09/14/2021	5	0.9222	7.11	193.04	53.6	0	13.14	0.267	0	0.267	7.728	3.65	0.87
09/21/2021	6	0.9704	7.93	281.41	57.4	0	271.4	0.215	0	0.215	6.87	3.85	0.93
09/28/2021	7	0.9245	6.58	97.93	61.2	2.61	13.51	0.22	0	0.22	8.485	4.6	1.15
10/05/2021	8	0.8092	6.68	149.55	42.7	3.22	9.29	0.627	0	0.627	6.653	3.43	0.85
10/12/2021	9	0.8073	6.65	147.52	39.5	2.35	9.45	0.195	0	0.195	5.646	2.94	0.66
10/19/2021	10	0.9179	7.09	155.38	36.8	0.84	10.86	0.217	0	0.217	4.892	3.15	0.7
10/26/2021	11	0.8199	7	186.55	40.5	0.2	14.09	0.493	0	0.493	5.69	2.74	0.69
11/02/2021	12	0.8392	6.68	229.33	43.7	6.59	9.3	0.212	0	0.212	6.172	3.4	0.78
11/09/2021	13	0.8627	7.36	229.86	84.3	0	29.22	0	0	0	3.642	9.16	2.18
11/16/2021	14	0.8116	6.3	245.5	50.8	8.48	13.24	0.223	0	0.223	6.749	4.3	0.96
11/23/2021	15	0.8131	6.9	236.44	46.9	0.32	11.12	0.378	0	0.378	6.9	3.94	0.9
11/30/2021	16	0.8079	6.92	228.29	39.9	2.25	9.5	0.259	0	0.259	-	3.57	0.79
12/07/2021	17	0.9033	6.7	250.44	39.3	4.64	9.05	0	0	0	-	3.28	0.74
12/14/2021	18	0.7844	6.69	289.52	33.1	2.55	7.96	0.856	0	0.856	-	3.38	0.8
12/21/2021	19	0.9393	6.48	307.07	34.5	2.98	10.89	0	0	0	-	3.57	0.83
12/28/2021	20	0.7389	6.52	315.47	35.5	2.87	11.61	0	0	0	-	3.49	0.78
01/04/2022	21	0.8766	6.61	332.06	39.3	5.43	8.54	0	0	0	-	-	-
01/11/2022	22	0.8917	6.47	320.28	36.1	3.14	8.47	-	0	-	-	-	-

Table D-16. Humidity Cell Test Results for W21R-4748 160-180 (HC-1) (Page 2of 2)

Analysis, mg/L	Week 0	Week 1	Week 2	Week 4	Week 8	Week 12	Week 16	Week 20	Week 24	Week 28	Week 30
Alkalinity, CaCO3	27	43	11	17	8.3	8.9	12	11	8.8	8.1	9.4
CO3, CaCO3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HCO3	27	43	11	17	8.3	8.9	12	11	8.8	8.1	9.4
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aluminum	0.60	0.094	0.87	1.3	0.93	0.72	0.67	0.82	1.9	0.53	0.57
Antimony	0.016	0.020	0.016	0.016	0.011	0.011	0.0095	0.0097	0.0074	0.0085	0.0076
Arsenic	0.029	0.038	0.070	0.065	0.067	0.057	0.056	0.047	0.045	0.041	0.039
Barium	0.17	0.21	0.15	0.22	0.13	0.14	0.23	0.14	0.29	0.24	0.23
Beryllium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cadmium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Calcium	13	9.1	3.5	4.7	3.1	3.2	3.4	3.1	3.6	3.6	3.2
Chloride	14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Copper	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Fluoride	1.8	1.8	1.5	1.2	0.59	0.39	0.34	<0.30	<0.30	<0.30	<0.30
Iron	0.34	<0.10	0.54	0.87	0.62	0.67	0.63	0.37	0.79	0.46	0.53
Lead	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Magnesium	3.2	2.3	0.94	1.3	0.84	0.89	0.96	0.85	1.1	0.96	0.87
Manganese	0.018	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Mercury	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045
Nickel	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Nitrate as N	0.21	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Nitrite as N	0.11	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Total Kjeldahl Nitrogen	0.88	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Nitrogen, Total	1.2	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
pH, stu	7.28	7.51	7.05	7.10	7.41	6.75	7.22	6.02	6.80	7.23	6.04
Potassium	7.6	5.9	3.5	4.1	3.5	3.3	<1.0	2.8	3.3	2.6	2.3
Selenium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Silver	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sodium	14	10	6.1	4.7	1.9	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Sulfate	31	19	18	13	7.2	7.3	7.1	5.9	5.6	6.6	6.4
Thallium	0.0018	0.0016	0.0011	0.0011	<0.0010	0.0012	0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Dissolved Solids	130	74	77	91	34	91	120	48	51	59	66
Zinc	<0.020	<0.020	<0.020	0.020	<0.020	<0.020	0.026	<0.020	0.029	<0.020	0.032
Cations, meq/L	1.80	1.24	0.73	0.84	0.53	0.43	0.36	0.41	0.61	0.41	0.38
Anions, meq/L	1.69	1.35	0.67	0.67	0.35	0.35	0.41	0.34	0.29	0.30	0.32
Balance, %	3.19	4.25	4.20	11.2	21.1	10.6	6.26	8.62	35.1	15.5	8.78
WETLAB Report No.	21080370	21080599	21080823	21090214	21100125	21110148	21110941	21120797	22010664	22020641	22030281

Table D-17. Humidity Cell Test Results for W21R-4749 140-160 (HC-2) (Page 1 of 2)

Date	Week No.	Vol.	pH	Redox (vs Ag/AgCl)	EC	Acidity	Alkalinity	Total Iron	Fe ²⁺	Fe ³⁺	SO ₄ ⁼	Ca	Mg
		L.	stu	mV	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
08/10/2021	0	1.5348	7.75	293.87	210	1.09	26.39	0.27	0.14	0.13	36.56	11.9	2.33
08/17/2021	1	0.9873	7.99	306.6	163.9	0	42.01	0	0	0	22.059	9.64	2.06
08/24/2021	2	0.929	7.67	276.88	80.2	0	17.8	0.236	0	0.236	13.597	4.47	0.85
08/31/2021	3	0.9445	8.31	237.69	60.4	0	31.24	0.27	0	0.27	8.753	3.44	0.79
09/07/2021	4	0.978	7.56	275.38	87.6	0	24.4	0.314	0	0.314	12.023	5.35	1.37
09/14/2021	5	0.9354	7.07	222.58	52.1	0	12.41	0.324	0	0.324	7.871	2.71	0.69
09/21/2021	6	0.9857	6.73	322.65	64.2	0	17.05	0.278	0	0.278	6.594	3.61	0.95
09/28/2021	7	0.9825	6.63	131.19	65.7	0.28	15.95	0.245	0	0.245	8.25	4.05	1.04
10/05/2021	8	0.8492	6.74	170.39	43.9	1.05	9.54	0.327	0	0.327	6.363	2.78	0.73
10/12/2021	9	0.8052	6.86	170.53	55.2	0	12.3	0.36	0	0.36	7.699	3.46	0.86
10/19/2021	10	0.871	7.22	194.31	55.8	0	16.75	0.379	0	0.379	5.771	3.37	0.86
10/26/2021	11	0.8328	7.11	205.74	46.3	0	13.47	0.12	0	0.12	6.081	2.68	0.69
11/02/2021	12	0.84	6.68	236.64	46.5	4.87	10.69	0.321	0	0.321	0	3	0.79
11/09/2021	13	0.8805	7.43	253.74	90	0	34.15	0	0	0	2.947	8.18	2.17
11/16/2021	14	0.8015	6.17	268.03	44	7.45	12.45	0.334	0	0.334	5.447	2.96	0.74
11/23/2021	15	0.844	6.97	249.14	45.3	0	11.66	0.527	0	0.527	6.06	3.57	0.94
11/30/2021	16	0.8386	6.99	251.97	45	1.44	10.76	0.385	0	0.385	-	3.46	0.85
12/07/2021	17	0.9108	6.71	267.75	43.4	5.38	8.54	0	0	0	-	3.18	0.81
12/14/2021	18	0.792	6.75	323.58	40.5	1.8	9.52	0.14	0	0.14	-	3.72	0.96
12/21/2021	19	0.9264	6.55	323.39	40.5	2.61	12.49	0	0	0	-	3.8	0.99
12/28/2021	20	0.7513	6.63	326.19	41	1.74	11.45	0	0	0	-	3.79	0.92
01/04/2022	21	0.8684	6.62	340.86	40.9	1.48	13.28	0	0	0	-	-	-
01/11/2022	22	0.8777	6.5	337.8	41.3	2.76	9.26	-	0	-	-	-	-

Table D-17. Humidity Cell Test Results for W21R-4749 140-160 (HC-2) (Page 2 of 2)

Analysis, mg/L	Week 0	Week 1	Week 2	Week 4	Week 8	Week 12	Week 16	Week 20	Week 24	Week 28	Week 30
Alkalinity, CaCO ₃	27	43	16	22	8.7	10	13	11	10	8.0	8.6
CO ₃ , CaCO ₃	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HCO ₃	27	43	16	22	8.7	10	13	11	10	8.0	8.6
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aluminum	0.82	<0.050	0.22	0.80	0.46	1.7	0.41	0.79	0.16	0.18	0.14
Antimony	0.011	0.012	0.0068	0.011	0.0055	0.0065	0.0063	0.0051	0.0044	0.0039	0.0035
Arsenic	0.049	0.048	0.044	0.062	0.051	0.054	0.048	0.048	0.025	0.026	0.020
Barium	0.21	0.16	0.19	0.29	0.15	0.19	0.27	0.30	0.25	0.23	0.22
Beryllium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cadmium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Calcium	10	8.4	4.1	4.6	2.5	5.7	3.3	3.3	3.6	3.0	2.7
Chloride	7.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Copper	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.050	<0.040	<0.040	<0.040	<0.040
Fluoride	1.9	1.8	0.97	1.0	0.49	0.52	0.49	0.39	0.50	0.44	0.49
Iron	0.58	<0.10	0.16	0.49	0.27	0.39	0.29	0.55	<0.10	0.11	<0.10
Lead	0.0056	<0.0025	<0.0025	0.0032	<0.0025	0.0029	0.0029	0.0027	<0.0025	<0.0025	<0.0025
Magnesium	2.2	2.0	0.88	1.3	0.69	2.2	1.0	0.94	1.8	0.84	0.79
Manganese	0.016	<0.010	<0.010	<0.010	<0.010	0.016	<0.010	<0.010	<0.010	<0.010	<0.010
Mercury	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045
Nickel	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Nitrate as N	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Nitrite as N	0.072	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Total Kjeldahl Nitrogen	0.72	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Nitrogen, Total	0.90	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
pH, stu	7.43	7.58	7.18	7.23	7.33	6.92	7.30	6.00	6.82	7.06	6.03
Potassium	12	8.6	4.4	5.2	3.2	3.1	<1.0	2.2	2.3	1.9	1.5
Selenium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Silver	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sodium	16	13	6.3	6.9	2.7	2.4	2.0	2.7	<1.5	<1.5	<1.5
Sulfate	40	23	16	14	6.9	7.0	7.6	7.7	7.6	5.0	4.7
Thallium	0.0013	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Dissolved Solids	130	52	<25	120	<25	140	87	64	48	86	42
Zinc	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cations, meq/L	1.81	1.37	0.70	0.88	0.45	0.86	0.40	0.53	0.40	0.29	0.25
Anions, meq/L	1.68	1.43	0.70	1.26	0.34	0.37	0.44	0.40	0.38	1.73	0.30
Balance, %	3.49	2.28	<1.00	17.4	13.1	39.5	5.61	14.2	2.53	71.0	7.62
WETLAB Report No.	21080370	21080599	21080823	21090214	21100125	21110148	21110941	21120797	22010664	22020641	22030281

Table D-18. Humidity Cell Test Results for W21R-4753 540-590 (HC-3) (Page 1 of 2)

Date	Week	Vol.	pH	Redox (vs Ag/AgCl)	EC	Acidity	Alkalinity	Total Iron	Fe ²⁺	Fe ³⁺	SO ₄ ⁼	Ca	Mg
	No.	L.	stu	mV	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
08/10/2021	0	1.6286	8.35	284.47	231	0	41.79	0	0	0	36.299	11.1	4.22
08/17/2021	1	0.9434	8.64	289.78	107.2	0	29.81	0	0	0	12.916	5.56	1.78
08/24/2021	2	0.7542	8.97	260.33	118.8	0	33.16	0.379	0	0.379	15.326	6.17	1.93
08/31/2021	3	0.8918	7.24	274.01	94.6	1.74	10.18	0.244	0	0.244	12.365	6.04	1.99
09/07/2021	4	0.9708	7.94	283.58	97	0	36.83	0.128	0	0.128	7.299	7.65	2.6
09/14/2021	5	0.9288	7.65	236.04	76.7	0	27.43	0.13	0	0.13	5.795	5.13	1.78
09/21/2021	6	0.9839	7.28	300.91	89.4	0	31.33	0	0	0	4.94	6.74	2.12
09/28/2021	7	0.9955	7.04	150.32	86.8	0	31.61	0	0	0	4.731	7.48	2.34
10/05/2021	8	0.8249	7.42	180.65	82.3	0	27.4	0.129	0	0.129	5.234	6.95	2.21
10/12/2021	9	0.8177	7.55	179.82	86.6	0	29.65	0.119	0	0.119	5.135	6.85	2.21
10/19/2021	10	0.9349	7.77	212.07	97.5	0	38.26	0	0	0	0	9.62	3.08
10/26/2021	11	0.8403	7.77	223.64	108.1	0	45.83	0	0	0	5.456	8.46	2.81
11/02/2021	12	0.8683	7.34	248.93	104.8	0	38.2	0	0	0	4.589	8.98	3.03
11/09/2021	13	0.952	7.93	275.14	193.3	0	82.19	0	0	0	3.445	19.5	5.43
11/16/2021	14	0.8178	7.06	285.09	104.5	0	36.98	0.185	0	0.185	4.153	9.95	3.08
11/23/2021	15	0.8717	7.9	249.34	90.7	0	34.81	0.101	0	0.101	3.236	9.86	3.2
11/30/2021	16	0.8557	7.72	256.38	93.4	0	32.18	0.12	0	0.12	-	9.06	2.75
12/07/2021	17	0.808	7.58	277.83	119.5	0	37.43	0	0	0	-	11.8	3.65
12/14/2021	18	0.8649	7.4	338.67	76.8	0	30.46	0.762	0	0.762	-	9.5	2.81
12/21/2021	19	0.9372	7.39	339.47	98.9	0	39.5	0	0	0	-	12.7	3.65
12/28/2021	20	0.8084	7.36	341.3	80.9	0	31.66	0	0	0	-	9.61	2.82
01/04/2022	21	0.8949	7.33	348.84	89.4	0	30.62	0	0	0	-	-	-
01/11/2022	22	0.8912	7.26	352.74	83.8	0	30.97	-	0	-	-	-	-

Table D-18. Humidity Cell Test Results for W21R-4753 540-590 (HC-3) (Page 2 of 2)

Analysis, mg/L	Week 0	Week 1	Week 2	Week 4	Week 8	Week 12	Week 16	Week 20	Week 24	Week 28	Week 30
Alkalinity, CaCO ₃	42	30	34	37	30	42	40	36	23	32	33
CO ₃ , CaCO ₃	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HCO ₃	42	30	34	37	30	42	40	36	23	32	33
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aluminum	0.075	0.075	0.35	0.065	0.068	<0.050	0.086	0.11	0.077	0.082	0.057
Antimony	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Arsenic	0.019	0.025	0.034	0.029	0.041	0.050	0.048	0.047	0.022	0.038	0.031
Barium	0.080	0.18	0.20	0.21	0.13	0.15	0.29	0.19	0.27	0.20	0.27
Beryllium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cadmium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Calcium	9.9	4.8	5.4	11	6.1	8.8	9.0	8.7	7.1	8.6	8.6
Chloride	7.9	1.8	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Copper	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.049	<0.040	<0.040	<0.040	<0.040
Fluoride	1.5	0.57	1.1	0.72	0.58	0.55	0.53	0.45	0.32	0.54	0.62
Iron	<0.10	<0.10	0.20	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Lead	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Magnesium	3.9	1.7	2.0	2.3	2.0	3.1	3.1	2.7	1.9	2.5	2.4
Manganese	0.036	0.013	0.012	0.012	<0.010	0.011	0.010	<0.010	<0.010	<0.010	<0.010
Mercury	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045
Nickel	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Nitrate as N	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Nitrite as N	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Total Kjeldahl Nitrogen	0.51	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Nitrogen, Total	0.64	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
pH, stu	7.80	7.38	7.76	7.60	7.91	7.50	7.84	6.32	7.24	7.68	6.38
Potassium	13	5.3	5.7	4.7	4.4	4.9	<1.0	3.0	1.6	2.5	1.9
Selenium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Silver	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sodium	17	8.9	9.5	5.6	3.2	1.9	1.8	<1.5	<1.5	<1.5	<1.5
Sulfate	40	14	18	8.5	5.6	5.4	4.7	3.1	2.7	2.1	3.1
Thallium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Dissolved Solids	120	29	<25	65	<25	120	94	49	<25	43	45
Zinc	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cations, meq/L	1.90	0.91	1.04	1.11	0.73	0.90	0.79	0.75	0.56	0.71	0.68
Anions, meq/L	1.97	0.97	1.14	0.95	0.75	0.98	0.93	0.81	0.53	0.71	0.76
Balance, %	2.00	3.24	4.58	7.52	1.25	4.16	7.64	4.03	2.50	<1.00	5.23
WETLAB Report No.	21080370	21080599	21080823	21090214	21100125	21110148	21110941	21120797	22010664	22020641	22030281

Table D-19. Humidity Cell Test Results for W21R-4755 30-50 (HC-4) (Page 1 of 2)

Date	Week	Vol.	pH	Redox (vs Ag/AgCl)	EC	Acidity	Alkalinity	Total Iron	Fe ²⁺	Fe ³⁺	SO ₄ ⁼	Ca	Mg
	No.	L.	stu	mV	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
08/10/2021	0	1.3288	7.27	300.41	187.9	6.43	19.83	0.153	0	0.153	22.13	10	2.78
08/17/2021	1	0.8622	7.25	318.76	122.6	0	13.29	0.195	0	0.195	24.716	5.19	1.3
08/24/2021	2	0.7104	7.29	296.02	98	1.14	17.63	3.62	0	3.62	22.52	4.3	1.75
08/31/2021	3	0.8566	8	269.28	57.1	0	272.88	2.34	0	2.34	12.759	2.6	1.1
09/07/2021	4	0.9679	7.29	293.82	52.2	0	18.19	0.97	0	0.97	12.26	3.31	0.9
09/14/2021	5	0.8933	6.86	242.3	38.1	1.07	10.35	0.212	0	0.212	5.825	1.05	<0.5
09/21/2021	6	0.987	6.74	288.87	42.4	1.32	10.99	0.309	0	0.309	4.661	1.29	<0.5
09/28/2021	7	0.9954	6.35	173.75	40.2	2.8	10.28	0.467	0	0.467	4.15	1.64	<0.5
10/05/2021	8	0.7794	6.72	199.31	35	2.95	8.62	4.82	0	4.82	7.403	1.97	1.4
10/12/2021	9	0.9681	6.84	195.92	32.7	0	11.12	0.539	0	0.539	2.49	1.86	0.5
10/19/2021	10	0.9359	7.12	221.19	33.4	1.3	12.78	0.279	0	0.279	2.301	1.16	<0.5
10/26/2021	11	0.8276	6.92	227.96	27.3	0.3	10.69	0.119	0	0.119	1.75	0.53	<0.5
11/02/2021	12	0.816	6.54	245.82	30.6	3.98	12.45	0.244	0	0.244	3.988	1.73	<0.5
11/09/2021	13	0.8495	6.8	288.18	68.4	0	30.11	0	0	0	1.178	2.83	0.8
11/16/2021	14	0.7381	6.21	275.16	30.2	8.41	9.46	0.184	0	0.184	1.161	1.14	<0.5
11/23/2021	15	0.8257	7.17	256.94	27.7	3.09	11.82	0.18	0	0.18	0	0.59	<0.5
11/30/2021	16	0.8255	7.13	260.22	28.4	3.49	10.4	0.399	0	0.399	Pending	1.64	<0.5
12/07/2021	17	0.8949	6.6	282.69	21.8	5.56	7.37	0.139	0	0.139	Pending	0.65	<0.5
12/14/2021	18	0.828	6.79	336.58	23.1	3.18	8.74	0.228	0	0.228	Pending	0.78	<0.5
12/21/2021	19	0.9402	6.52	336.26	27.2	5.32	9.95	0.139	0	0.139	Pending	1.42	<0.5
12/28/2021	20	0.8442	6.46	335.52	21.1	4.27	8.37	0	0	0	Pending	0.81	<0.5
01/04/2022	21	0.8796	6.43	339.31	21	5.53	6.91	0	0	0	Pending	Pending	Pending
01/11/2022	22	0.9268	6.56	340.67	25.2	3.79	9.49	Pending	0	Pending	Pending	Pending	Pending

Table D-19. Humidity Cell Test Results for W21R-4755 30-50 (HC-4) (Page 2 of 2)

Analysis, mg/L	Week 0	Week 1	Week 2	Week 4	Week 8	Week 12	Week 16	Week 20	Week 24	Week 28	Week 30
Alkalinity, CaCO ₃	12	8.2	8.6	12	8.6	12	15	9.1	9.6	7.1	9.5
CO ₃ , CaCO ₃	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HCO ₃	12	8.2	8.6	12	8.6	12	15	9.1	9.6	7.1	9.5
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aluminum	0.73	2.7	10	11	11	6.1	2.9	1.5	1.9	1.5	2.0
Antimony	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Arsenic	0.0093	0.014	0.027	0.022	0.029	0.025	0.022	0.015	0.013	0.012	0.011
Barium	0.19	0.24	0.37	0.41	0.32	0.26	0.27	<0.020	0.20	0.19	0.36
Beryllium	<0.0010	<0.0010	0.0014	0.0016	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cadmium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Calcium	8.8	4.5	3.8	2.8	1.8	1.5	1.4	0.64	1.1	0.91	1.3
Chloride	11	7.6	4.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	<0.0050	<0.0050	0.0099	0.012	0.011	0.0071	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Copper	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Fluoride	6.6	0.84	1.0	0.92	0.96	0.87	0.80	0.49	0.48	0.38	0.32
Iron	0.39	0.97	4.7	4.8	4.3	2.9	1.4	0.45	0.76	0.69	0.82
Lead	<0.0025	<0.0025	0.0068	0.0044	0.0041	0.0033	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Magnesium	2.6	1.5	1.9	1.7	1.4	0.93	0.65	<0.50	<0.50	<0.50	0.52
Manganese	0.067	0.027	0.040	0.036	0.033	0.022	0.012	<0.010	<0.010	<0.010	<0.010
Mercury	<0.00045	<0.00045	<0.0020	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045
Nickel	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Nitrate as N	0.19	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Nitrite as N	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Total Kjeldahl Nitrogen	0.58	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Nitrogen, Total	0.80	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
pH, stu	6.92	6.75	6.84	6.93	7.15	7.19	7.37	6.10	6.89	7.01	6.14
Potassium	4.3	3.2	5.8	6.1	5.6	3.5	<1.0	1.5	1.7	1.7	1.4
Selenium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Silver	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sodium	20	15	13	9.2	7.7	5.9	6.3	3.3	4.0	3.1	4.5
Sulfate	23	24	26	14	8.0	4.7	3.3	<1.5	<1.5	<1.5	3.8
Thallium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Dissolved Solids	150	130	290	310	160	220	120	33	55	74	68
Zinc	0.023	0.027	0.096	0.080	0.074	0.058	0.045	<0.020	0.027	<0.020	0.023
Cations, meq/L	1.74	1.44	2.43	2.32	2.14	1.33	0.80	0.40	0.53	0.43	0.61
Anions, meq/L	1.39	0.92	0.89	0.58	0.39	0.38	0.41	0.21	0.22	0.16	0.29
Balance, %	11.1	21.8	46.5	60.0	69.2	55.3	32.0	32.2	41.5	45.1	35.9
WETLAB Report No.	21080370	21080599	21080823	21090214	21100125	21110148	21110941	21120797	22010664	22020641	22030281

Table D-20. Humidity Cell Test Results for W21R-4767 (HC-5) (Page 1 of 2)

Date	Week	Vol.	pH	Redox (vs Ag/AgCl)	EC	Acidity	Alkalinity	Total Iron	Fe ²⁺	Fe ³⁺	SO ₄ ⁼	Ca	Mg
	No.	L.	stu	mV	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
08/30/2021	0	1.6326	7.94	319.01	183.8	0	27.4	0	0	0	56.2	12.1	3.9
09/06/2021	1	0.7054	7.8	252.86	175.4	0	28.12	0.145	0	0.145	37.2	10.4	3.5
09/13/2021	2	0.9145	7.58	218.85	260	0	24.88	0	0	0	22.6	9.3	2.5
09/20/2021	3	0.9713	7.76	236.1	189	0	26.15	0	0	0	14.2	7.6	2.0
09/27/2021	4	0.9805	7.06	253.36	103.6	0.34	28.87	0	0	0	11.9	9.2	2.2
10/04/2021	5	0.9313	7.26	265.97	183.5	0	20.86	0	0	0	10.5	7.6	1.9
10/11/2021	6	0.9031	7.33	265.39	80.5	0	20.91	0	0	0	9.7	7.6	1.9
10/18/2021	7	0.9264	7.37	258.96	77	0	21.34	0	0	0	8.6	8.3	2.0
10/25/2021	8	0.9228	7.35	264.65	73.4	0	23.89	0	0	0	7.5	6.8	1.6
11/01/2021	9	0.9127	6.98	208.62	71.2	3.34	17.05	0	0	0	7.2	6.7	1.6
11/08/2021	10	0.8779	7.54	292.83	105.2	0	38.57	0	0	0	6.0	11.2	2.7
11/15/2021	11	0.9041	6.48	291.05	64.3	10.33	16.28	0	0	0	5.8	6.2	1.4
11/22/2021	12	0.827	7.4	298.21	63.6	0	17.6	0	0	0	6.6	6.2	1.4
11/29/2021	13	0.833	7.51	306.28	62.3	0	17.83	0	0	0	Pending	6.5	1.5
12/06/2021	14	0.7012	7.45	264.15	86.5	1.97	23.4	0	0	0	Pending	9.0	2.2
12/13/2021	15	0.8485	7.46	330.75	50.1	0	14.73	0.509	0	0.509	Pending	6.0	1.4
12/20/2021	16	0.8242	6.14	362.42	46.4	1.84	12.3	0	0	0	Pending	7.0	1.5
12/27/2021	17	0.7013	6.59	359.09	62	2.35	13.83	0	0	0	Pending	7.6	1.9
01/03/2022	18	0.7826	6.06	386.17	40.7	3.38	9.78	0	0	0	Pending	5.1	1.4
01/10/2022	19	0.809	5.94	388.64	49.1	4.7	10.36	Pending	0	Pending	Pending	Pending	Pending

Table D-20. Humidity Cell Test Results for W21R-4767 (HC-5) (Page 2 of 2)

Analysis, mg/L	Week 0	Week 1	Week 2	Week 4	Week 8	Week 12	Week 16	Week 20	Week 24	Week 27
Alkalinity, CaCO ₃	28	27	26	29	25	19	16	14	14	15
CO ₃ , CaCO ₃	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HCO ₃	28	27	26	29	25	19	16	14	14	15
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aluminum	0.13	0.42	<0.050	0.068	<0.050	0.073	0.35	0.092	<0.050	<0.050
Antimony	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Arsenic	0.020	0.034	0.036	0.038	0.036	0.042	0.028	0.016	0.023	0.017
Barium	0.080	0.095	0.075	0.099	0.098	0.11	0.12	0.098	0.11	0.10
Beryllium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cadmium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Calcium	10	9.2	8.5	9.4	7.2	6.5	5.0	5.4	5.5	5.0
Chloride	4.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Copper	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Fluoride	2.4	2.2	1.7	1.0	1.0	0.90	0.80	1.1	1.3	1.1
Iron	<0.10	0.19	<0.10	<0.10	<0.10	<0.10	0.19	<0.10	<0.10	<0.10
Lead	<0.0025	0.0032	<0.0025	0.0053	<0.0025	<0.0025	0.0039	<0.0025	<0.0025	<0.0025
Magnesium	3.5	3.1	2.3	2.5	1.8	1.6	1.2	1.3	1.3	1.1
Manganese	0.064	0.029	0.021	0.027	0.016	0.012	0.015	<0.010	<0.010	<0.010
Mercury	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045
Nickel	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Nitrate as N	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Nitrite as N	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Total Kjeldahl Nitrogen	0.90	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Nitrogen, Total	0.97	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
pH, stu	7.10	7.11	7.48	7.64	6.25	7.46	7.42	7.09	6.59	6.22
Potassium	9.7	5.9	4.1	3.2	1.9	1.7	1.3	1.2	1.2	<1.0
Selenium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Silver	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sodium	16	11	6.7	3.8	2.0	<1.5	<1.5	<1.5	<1.5	<1.5
Sulfate	59	40	25	13	8.7	7.5	4.4	5.5	4.7	3.7
Thallium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Dissolved Solids	140	93	62	59	67	38	41	<25	39	68
Zinc	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cations, meq/L	1.75	1.40	1.01	0.93	0.64	0.51	0.43	0.42	0.41	0.34
Anions, meq/L	2.03	1.53	1.13	0.90	0.73	0.58	0.45	0.45	0.45	0.43
Balance, %	7.40	4.31	5.57	1.50	6.53	6.89	2.53	4.01	3.96	12.2
WETLAB Report No.	21081043	21090263	21090479	21091011	21100818	21110833	21120702	22010459	22020417	22030252

Table D-21. Humidity Cell Test Results for W21R-4771(HC-6) (Page 1 of 2)

Date	Week	Vol.	pH	Redox (vs Ag/AgCl)	EC	Acidity	Alkalinity	Total Iron	Fe ²⁺	Fe ³⁺	SO ₄ ⁼	Ca	Mg
	No.	L.	stu	mV	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
08/30/2021	0	1.4334	8.32	282.64	231	0	217.02	0	0	0	38.077	18.6	4.37
09/06/2021	1	0.951	8.11	266.01	185.8	0	71.22	0	0	0	8.643	12.6	2.64
09/13/2021	2	0.9108	7.99	231.76	123.7	0	61.46	0.135	0	0.135	5.933	12	2.5
09/20/2021	3	0.9354	7.86	223.48	96	0	293.78	0	0	0	3.891	9.05	1.83
09/27/2021	4	0.9603	7.31	265.4	137.9	0	56.93	0	0	0	3.557	12.2	2.3
10/04/2021	5	0.8373	7.62	267.54	82.1	0	58.95	0.176	0	0.176	3.093	13.9	2.86
10/11/2021	6	0.9301	7.73	271.39	144.1	0	59.62	0	0	0	1.14	15.3	2.82
10/18/2021	7	0.9176	7.72	268.33	145.5	0	61.98	0	0	0	1.848	15	2.76
10/25/2021	8	0.9574	7.63	267.67	121.2	0	57.38	0.113	0	0.113	1.574	12.3	2.17
11/01/2021	9	0.9466	7.48	218.48	128.3	0	51.93	0	0	0	0	13.4	2.45
11/08/2021	10	0.9436	7.71	301.27	131.3	0	56.67	0	0	0	1.159	13.9	2.52
11/15/2021	11	0.8737	7.18	296.21	146.3	0	59.9	0	0	0	1.19	17.3	3.17
11/22/2021	12	0.8362	7.85	302.89	143.4	0	59.32	0	0	0	0	17.1	3.09
11/29/2021	13	0.7862	7.85	311.29	143.1	0	58.21	0.128	0	0.128	Pending	17.1	3.24
12/06/2021	14	0.702	7.71	270.61	158.5	0	55.13	0	0	0	Pending	18.4	3.93
12/13/2021	15	0.8099	7.87	346.77	132.5	0	58.45	0.127	0	0.127	Pending	19	3.84
12/20/2021	16	0.8764	7.44	349.75	122.1	0	54.17	0	0	0	Pending	18.2	3.46
12/27/2021	17	0.7587	7.59	348.69	133.4	0	58.01	0	0	0	Pending	18.7	3.94
01/03/2022	18	0.7959	7.48	365.04	129.6	0	47.89	0	0	0	Pending	17.9	3.71
01/10/2022	19	0.7957	7.44	362.69	127.2	0	51.87	Pending	0	Pending	Pending	Pending	Pending

Table D-21. Humidity Cell Test Results for W21R-4771(HC-6) (Page 2 of 2)

Analysis, mg/L	Week 0	Week 1	Week 2	Week 4	Week 8	Week 12	Week 16	Week 20	Week 24	Week 27
Alkalinity, CaCO ₃	95	73	63	57	57	68	60	68	61	64
CO ₃ , CaCO ₃	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HCO ₃	95	73	63	57	57	68	60	68	61	64
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aluminum	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.41	<0.050	<0.050	<0.050
Antimony	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Arsenic	0.037	0.056	0.065	0.068	0.064	0.055	0.041	0.030	0.034	0.034
Barium	0.061	0.12	0.14	0.15	0.17	0.25	0.22	0.24	0.22	0.24
Beryllium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cadmium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Calcium	17	11	11	12	14	19	16	19	18	19
Chloride	7.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Copper	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Fluoride	3.6	1.5	0.77	0.49	0.38	0.33	<0.30	<0.30	0.32	<0.30
Iron	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.42	<0.10	<0.10	<0.10
Lead	<0.0025	<0.0025	<0.0025	0.0054	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Magnesium	4.1	2.3	2.3	2.4	2.5	3.5	3.1	3.6	3.0	3.3
Manganese	0.023	0.014	<0.010	<0.010	<0.010	<0.010	0.015	<0.010	<0.010	<0.010
Mercury	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045
Nickel	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Nitrate as N	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Nitrite as N	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Total Kjeldahl Nitrogen	0.50	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Nitrogen, Total	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
pH, stu	7.85	7.66	7.63	8.01	6.52	7.95	7.91	7.86	7.25	6.66
Potassium	25	15	14	11	7.8	7.1	4.4	3.8	3.0	2.9
Selenium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Silver	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sodium	26	11	6.9	3.4	1.6	<1.5	<1.5	<1.5	<1.5	<1.5
Sulfate	43	10	7.2	3.8	1.8	<1.5	<1.5	<1.5	<1.5	<1.5
Thallium	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010
Total Dissolved Solids	210	120	68	110	78	100	38	45	84	96
Zinc	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cations, meq/L	2.96	1.60	1.40	1.23	1.17	1.42	1.23	1.34	1.22	1.29
Anions, meq/L	3.20	1.75	1.45	1.24	1.20	1.38	1.20	1.36	1.24	1.28
Balance, %	3.87	4.34	1.87	<1.00	<1.00	1.47	1.46	<1.00	<1.00	<1.00
WETLAB Report No.	21081043	21090263	21090479	21091011	21100818	21110833	21120702	22010459	22020417	22030252

Table D-22. Humidity Cell Test Results for W21R-4772 (HC-7) (Page 1 of 2)

Date	Week	Vol.	pH	Redox (vs Ag/AgCl)	EC	Acidity	Alkalinity	Total Iron	Fe ²⁺	Fe ³⁺	SO ₄ ⁼	Ca	Mg
	No.	L.	stu	mV	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
08/30/2021	0	1.5057	7.9	336.35	341	0	173.1	0	0	0	135.842	20.3	4.42
09/06/2021	1	0.9357	8.02	292.19	218	0	58.57	0	0	0	26.578	12.4	2.43
09/13/2021	2	0.9606	7.77	254.27	155.9	0	46.66	0.1	0	0.1	20.326	12.9	2.28
09/20/2021	3	0.9462	7.81	360.71	126	0	40.23	0	0	0	18.063	11	1.88
09/27/2021	4	0.9587	7.16	273.57	145.3	0	40.64	0	0	0	15.91	12.6	2.02
10/04/2021	5	0.9605	7.37	288.31	147.3	0	36.33	0	0	0	15.074	13.1	2.12
10/11/2021	6	0.9579	7.42	278.1	122.4	0	33.98	0	0	0	13.246	12.5	1.85
10/18/2021	7	0.9689	7.41	278.41	118.1	0	33.39	0	0	0	12.836	14.1	2.02
10/25/2021	8	0.9657	7.36	272.36	109.4	0	33.5	0	0	0	11.903	10.7	1.51
11/01/2021	9	0.9692	7.16	237.54	110	0	28.36	0	0	0	11.475	11.5	1.57
11/08/2021	10	0.9591	7.39	308.6	106	0	30.52	0	0	0	10.652	11.3	1.47
11/15/2021	11	0.9685	6.73	298.48	103.4	2.81	26.67	0.121	0	0.121	9.803	11.3	1.43
11/22/2021	12	0.9681	7.39	311.91	94.4	0	24.66	0.129	0	0.129	10.426	11.6	1.39
11/29/2021	13	0.9603	7.45	322.16	94.6	0	25.05	0	0	0	Pending	11.3	1.27
12/06/2021	14	0.9569	7.27	284.11	98.8	0	23.33	0	0	0	Pending	11.4	1.3
12/13/2021	15	0.7468	7.48	346.54	96	0	29.86	0	0	0	Pending	14.6	1.54
12/20/2021	16	0.969	7.09	344.71	78.1	2.89	19.17	0	0	0	Pending	11.8	1.2
12/27/2021	17	0.8903	7.15	342.61	79.6	0	21.98	0	0	0	Pending	11	1.12
01/03/2022	18	0.9435	7.16	361.52	79.7	3.08	17.83	0.405	0	0.405	Pending	10.7	1.18
01/10/2022	19	0.9483	7.06	362.29	76	2.12	17.2	Pending	0	Pending	Pending	Pending	Pending

Table D-22. Humidity Cell Test Results for W21R-4772 (HC-7) (Page 2 of 2)

Analysis, mg/L	Week 0	Week 1	Week 2	Week 4	Week 8	Week 12	Week 16	Week 20	Week 24	Week 27
Alkalinity, CaCO ₃	72	60	48	41	34	28	26	26	13	10
CO ₃ , CaCO ₃	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HCO ₃	72	60	48	41	34	28	26	26	13	10
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aluminum	0.13	<0.050	<0.050	0.070	0.051	0.10	0.27	0.074	0.18	0.12
Antimony	0.0037	0.0030	0.0028	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Arsenic	0.023	0.028	0.033	0.041	0.053	0.065	0.045	0.035	0.034	0.027
Barium	0.14	0.14	0.16	0.19	0.20	0.22	0.26	0.30	0.27	0.24
Beryllium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cadmium	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Calcium	18	11	12	13	12	11	10	10	7.4	6.5
Chloride	6.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.4
Chromium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Copper	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Fluoride	4.8	2.9	2.4	1.6	1.4	1.4	1.6	1.7	1.9	1.5
Iron	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.14	<0.10	0.11	<0.10
Lead	<0.0025	<0.0025	<0.0025	0.0070	<0.0025	<0.0025	0.0034	<0.0025	0.0031	<0.0025
Magnesium	4.3	2.0	2.2	2.2	1.8	1.4	1.1	0.97	0.64	0.60
Manganese	0.44	0.23	0.21	0.21	0.15	0.11	0.11	0.092	0.091	0.18
Mercury	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045
Nickel	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Nitrate as N	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Nitrite as N	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Total Kjeldahl Nitrogen	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	3.1
Nitrogen, Total	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	3.3
pH, stu	7.63	7.47	7.32	7.86	6.37	7.55	7.49	7.24	6.65	5.96
Potassium	35	15	11	7.7	3.9	2.9	2.1	2.1	2.0	2.0
Selenium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Silver	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sodium	49	15	9.8	5.2	2.4	1.6	<1.5	1.5	<1.5	3.0
Sulfate	130	31	23	18	14	12	8.2	8.2	8.7	11
Thallium	0.0029	0.0012	0.0013	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010
Total Dissolved Solids	290	150	79	79	71	54	60	39	68	62
Zinc	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Cations, meq/L	4.31	3.24	1.50	1.27	0.96	0.82	0.68	0.71	0.50	0.58
Anions, meq/L	4.58	2.00	1.56	1.28	1.04	0.88	0.77	0.78	0.54	0.60
Balance, %	3.10	23.7	2.27	<1.00	4.11	3.53	6.16	4.74	3.71	2.42
WETLAB Report No.	21081043	21090263	21090479	21091011	21100818	21110833	21120702	22010459	22020417	22030252

Table D-23. Humidity Cell Test Results for W21R-4774 (HC-8) (Page 1 of 2)

Date	Week No.	Vol.	pH	Redox (vs Ag/AgCl)	EC	Acidity	Alkalinity	Total Iron	Fe ²⁺	Fe ³⁺	SO ₄ ⁼	Ca	Mg
		L	stu	mV	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
08/30/2021	0	1.4527	8.01	338.49	524	0	215.77	1.82	0.51	1.31	14.966	31	7.55
09/06/2021	1	0.689	6.9	348.78	79.2	7.97	21.26	20.2	0	20.2	3.233	10.2	7.11
09/13/2021	2	0.931	7.34	276.18	171.8	4.86	27.8	9.85	0	9.85	34.231	11.5	4.86
09/20/2021	3	0.7363	7.27	300.27	158	6.18	16.14	0	0	0	9.569	5.59	1.3
09/27/2021	4	0.96	6.75	262.51	106	5.56	19.88	0	0	0	1.906	6.83	1.42
10/04/2021	5	0.7956	6.59	302.39	133.4	7.85	14.62	0	0	0	22.82	6.84	1.38
10/11/2021	6	0.8991	7.1	271.36	94.2	0	22.07	0	0	0	14.219	6.8	1.4
10/18/2021	7	1.0063	6.93	268.35	63.9	5.34	14.52	0	0	0	8.564	9.5	2.1
10/25/2021	8	0.7769	6.93	268.35	63.9	5.34	14.52	0	0	0	8.564	7.09	1.55
11/01/2021	10	0.9792	6.42	240.59	37.5	4.58	8.86	0	0	0	3.12	3.12	0.69
11/08/2021	11	0.991	6.9	306.08	43.9	3.59	11.53	0	0	0	4.88	3.32	0.73
11/15/2021	12	0.9811	6.33	298.01	53.4	11.6	15.8	0	0	0	4.693	5.39	1.13
11/22/2021	13	0.9839	7.05	308.79	38.4	1.83	12.26	0	0	0	8.729	5.11	0.8
11/29/2021	13	0.8861	7.14	309.93	38.4	0	15.33	0.256	0	0.256	Pending	3.92	0.77
12/06/2021	14	0.8994	6.65	277.28	36.8	5.82	9.94	0	0	0	Pending	3.55	0.68
12/13/2021	15	0.7651	6.92	330.91	33.8	4.22	9.09	0.132	0	0.132	Pending	4.08	0.84
12/20/2021	16	1.0242	6.63	328.29	31.5	2.56	13.61	0.198	0	0.198	Pending	4.33	0.85
12/27/2021	17	0.7965	6.64	340.07	35.1	2.22	10.02	Pending	0	Pending	Pending	6.02	2.71
01/03/2022	18	0.9543	6.65	332.05	33.2	4.23	9.79	0.761	0	0.761	Pending	3.72	0.87
01/10/2022	19	1.0444	6.49	343.97	27.7	3.09	10.45	Pending	0	Pending	Pending	Pending	Pending

Table D-23. Humidity Cell Test Results for W21R-4774 (HC-8) (Page 2 of 2)

Analysis, mg/L	Week 0	Week 1	Week 2	Week 4	Week 8	Week 12	Week 16	Week 20	Week 24	Week 27
Alkalinity, CaCO ₃	58	19	36	14	19	12	14	5.7	6.9	4.6
CO ₃ , CaCO ₃	<1.0	<1.0	8.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HCO ₃	58	19	28	14	19	12	14	5.7	6.9	4.6
Hydroxide (OH)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Aluminum	9.1	62	2.2	<0.10	11	3.1	8.1	1.9	4.7	26
Antimony	0.0032	0.0033	<0.0025	0.0032	0.0030	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Arsenic	0.038	0.16	0.066	0.070	0.039	0.023	0.032	0.011	0.021	0.028
Barium	0.30	0.86	0.58	0.58	0.47	0.40	0.31	0.25	0.33	0.24
Beryllium	<0.0010	0.0041	0.0015	0.0016	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013
Cadmium	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Calcium	31	16	11	9.1	6.6	5.0	3.7	3.0	3.4	2.9
Chloride	5.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	0.0096	0.064	0.025	0.026	0.015	<0.0050	0.0096	<0.0050	0.0056	0.029
Copper	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Fluoride	4.5	4.7	4.3	4.1	2.0	1.2	0.68	0.48	0.55	0.47
Iron	1.8	18	6.2	6.4	3.5	1.1	3.1	0.60	1.5	5.5
Lead	0.0058	0.095	0.040	0.041	0.015	0.0053	0.016	<0.0025	0.0069	0.013
Magnesium	7.0	6.5	4.1	4.1	2.1	1.2	1.5	0.83	1.2	3.0
Manganese	0.022	0.038	0.018	0.018	<0.010	<0.010	0.012	<0.010	<0.010	0.012
Mercury	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045
Nickel	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Nitrate as N	<0.15	0.25	0.26	0.23	<0.15	<0.15	0.17	<0.15	<0.15	<0.15
Nitrite as N	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Total Kjeldahl Nitrogen	<0.40	1.2	0.67	0.52	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Nitrogen, Total	<0.61	1.5	0.96	0.78	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
pH, stu	7.99	6.86	8.34	7.37	6.23	7.18	7.03	6.58	6.34	5.81
Potassium	10	32	13	13	6.5	2.8	5.6	2.4	3.7	15
Selenium	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Silver	<0.0050	0.0093	0.0055	0.0056	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sodium	24	17	18	11	8.7	3.7	4.6	2.9	3.0	1.6
Sulfate	88	33	39	23	18	10	10	7.8	8.1	6.0
Thallium	0.0010	0.0048	0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Dissolved Solids	400	1,800	900	840	390	150	240	50	200	170
Zinc	0.044	0.25	0.11	0.12	0.086	0.025	0.062	<0.020	0.060	0.057
Cations, meq/L	4.53	10.8	2.58	1.95	2.46	0.99	1.72	0.65	1.10	4.03
Anions, meq/L	3.38	1.33	1.79	0.99	0.86	0.51	0.54	0.30	0.34	0.24
Balance, %	14.6	78.0	18.2	32.6	48.2	31.7	52.5	36.5	53.2	88.7
WETLAB Report No.	21090055	21090263	21090537	21091011	21100818	21110833	21120702	22010459	22020417	22030252

Table D-24. Nitrate Results (Page 1 of 3)

Hole ID	Sample ID	From	To	Rock Type	pH	NO3 (mg/L)	AA Value
FX3420	52921	200	210	Upper Dwd	8.0	2.8	0.075
FX3380	51518	220	230	Intermediate Dwd	8.0	1.0	0.066
FX3348	49389	230	240	Monzonite	8.9	0.9	0.001
FX3368	50722	60	70	Phonolite	8.3	0.7	0.001
FX3372	50984	80	90	Phonolite	8.5	0.0	0
FX3411	52460	90	100	Phonolite	8.1	0.7	0.003
W21R-4748	28157	150	160	Monzonite	7.18	<0.1	—
W21R-4749	28278	450	460	Monzonite	9.30	<0.1	—
W21R-4750	28334	170	180	Icebox Shale	7.47	<0.1	—
W21R-4751	28395	80	90	Trachyte	—	<0.1	—
W21R-4752	28499	480	490	Monzonite	—	<0.1	—
W21R-4753	28580	680	690	Monzonite	—	<0.1	—
W21R-4754	28650	480	490	Monzonite	—	<0.1	—
W21R-4755	28710	390	400	Intermediate Dwd	8.16	<0.1	—
W21R-4756	28763	350	360	Monzonite	—	<0.1	—
W21R-4757	28885	780	790	Monzonite	—	<0.1	—
W21R-4758	28900	130	140	Upper Dwd	9.09	<0.1	—
W21R-4759	28946	90	100	Icebox Shale	—	<0.1	—
W21R-4760	29078	500	510	Monzonite	—	<0.1	—
W21R-4761	29144	390	400	Monzonite	—	<0.1	—
W21R-4762	29193	330	340	Monzonite	—	<0.1	—
W21R-4763	29296	370	380	Monzonite	—	<0.1	—
W21R-4764	29400	650	660	Monzonite	—	<0.1	—
W21R-4765	29487	560	570	Monzonite	—	<0.1	—
W21R-4766	29582	570	580	Monzonite	—	<0.1	—
W21R-4767	29681	790	800	Intermediate Dwd	8.85	<0.1	—
W21R-4768	29729	380	390	Monzonite	—	<0.1	—
W21R-4769	29774	130	140	Upper Dwd	—	<0.1	—
W21R-4770	29870	420	430	Monzonite	—	<0.1	—
W21R-4771	29899	60	70	Upper Dwd	—	<0.1	—
W21R-4772	30037	580	590	Monzonite	9.52	<0.1	—
W21R-4773	30110	540	550	Monzonite	—	<0.1	—
W21R-4774	30207	570	580	Monzonite	8.91	<0.1	—
W21R-4775	30317	730	740	Monzonite	9.12	<0.1	—
W21R-4776	30374	430	440	Intermediate Dwd	—	<0.1	—
W21R-4777	30472	470	480	Intermediate Dwd	8.38	<0.1	—
W21R-4778	30509	70	80	Upper Dwd	—	<0.1	—
W21R-4779	30611	300	310	Upper Dwd	8.44	<0.1	—
W21R-4780	30731	590	600	Monzonite	9.10	<0.1	—
W21R-4781	30750	150	160	Upper Dwd	6.42	<0.1	—
W21R-4782	30858	440	450	Monzonite	—	<0.1	—
W21R-4783	30976	690	700	Intermediate Dwd	8.39	<0.1	—
W21R-4784	31040	510	520	Intermediate Dwd	8.30	<0.1	—
W21R-4785	31074	200	210	Phonolite	7.73	<0.1	—
W21R-4786	31146	200	210	Monzonite	6.94	<0.1	—
W21R-4787	31263	580	590	Intermediate Dwd	7.88	<0.1	—
W21R-4788	31311	360	370	Monzonite	8.39	<0.1	—
W21R-4789	31350	100	110	Trachyte	—	<0.1	—
W21R-4790	31440	260	270	Phonolite	—	<0.1	—
W21R-4791	31517	260	270	Upper Dwd	—	<0.1	—
W21R-4792	31639	760	770	Lower Dwd	—	<0.1	—
W21R-4793	31900	390	400	Intermediate Dwd	—	<0.1	
W21R-4794	31698	480	490	Monzonite	—	<0.1	—
W21R-4795	31771	620	630	Monzonite	—	<0.1	—
W21R-4796	32237	430	440	Intermediate Dwd	—	<0.1	—
W21R-4797	31791	140	150	Intermediate Dwd	—	<0.1	—
W21R-4798	31993	740	750	Monzonite	—	<0.1	—
W21R-4799	32020	190	200	Monzonite	—	<0.1	—
W21R-4800	32180	730	740	Monzonite	—	<0.1	—
W21R-4801	32354	760	770	Monzonite	—	<0.1	—

Table D-24. Nitrate Results (Page 2 of 3)

Hole ID	Sample ID	From	To	Rock Type	pH	NO3 (mg/L)	AA Value
W21R-4802	32388	280	290	Monzonite	—	<0.1	—
W21R-4803	32475	210	220	Monzonite	—	<0.1	—
W21R-4804	32529	10	20	Phonolite	—	<0.1	—
W21R-4805	32701	680	690	Lower Dwd	—	<0.1	—
W21R-4806	32737	190	200	Intermediate Dwd	—	<0.1	—
W21R-4807	32902	750	760	Monzonite	—	<0.1	—
W21R-4808	32991	700	710	Monzonite	—	<0.1	—
W21R-4809	33062	520	530	Intermediate Dwd	—	<0.1	—
W21R-4810	33144	420	430	Intermediate Dwd	—	<0.1	—
W21R-4811	33283	0	10	Phonolite	—	<0.1	—
W21R-4812	33212	210	220	Intermediate Dwd	—	<0.1	—
W21R-4813	33422	380	390	Monzonite	—	<0.1	—
W21R-4814	33481	120	130	Upper Dwd	—	<0.1	—
W21R-4815	33565	290	300	Intermediate Dwd	—	<0.1	—
W21R-4816	33656	260	270	Intermediate Dwd	—	<0.1	—
W21R-4817	33823	70	80	Icebox Shale	—	<0.1	—
W21R-4818	33730	80	90	Upper Dwd	—	<0.1	—
W21R-4819	34873	160	170	Upper Dwd	—	<0.1	—
W21R-4820	33885	120	130	Monzonite	—	<0.1	—
W21R-4821	34005	510	520	Monzonite	—	<0.1	—
W21R-4822	34127	740	750	Monzonite	—	<0.1	—
W21R-4823	34194	520	530	Monzonite	—	<0.1	—
W21R-4824	34290	540	550	Intermediate Dwd	—	<0.1	—
W21R-4825	34355	320	330	Monzonite	—	<0.1	—
W21R-4826	34481	570	580	Intermediate Dwd	—	<0.1	—
W21R-4827	34520	110	120	Upper Dwd	—	<0.1	—
W21R-4856	36099	250	260	Intermediate Dwd	—	<0.1	—
W21R-4857	36212	760	770	Lower Dwd	—	<0.1	—
W21R-4858	36250	320	330	Monzonite	—	<0.1	—
W21R-4859	36274	160	170	Trachyte	—	<0.1	—
W21R-4860	36327	260	270	Upper Dwd	—	<0.1	—
W21R-4861	36350	40	50	Trachyte	—	<0.1	—
W21R-4862	36482	750	760	Monzonite	—	<0.1	—
W21R-4863	36487	0	10	Trachyte	—	<0.1	—
W21R-4864	36552	170	180	Phonolite	—	<0.1	—
W21R-4865	36644	710	720	Intermediate Dwd	—	<0.1	—
W21R-4866	36700	400	410	Intermediate Dwd	—	<0.1	—
W21R-4867	36816	600	610	—	—	<0.1	—
W21R-4868	36904	690	700	—	—	<0.1	—
W21R-4869	36956	340	350	Intermediate Dwd	—	<0.1	—
W21R-4870	37015	30	40	Phonolite	—	<0.1	—
W21R-4871	37110	90	100	Phonolite	—	<0.1	—
W21R-4872	37213	240	250	Upper Dwd	—	<0.1	—
W21R-4873	37286	50	60	Phonolite	—	<0.1	—
W21R-4876	37474	140	150	Phonolite	—	<0.1	—
W21R-4877	37499	90	100	Phonolite	—	<0.1	—
W21R-4878	37542	240	250	Monzonite	—	<0.1	—
W21R-4879	37591	30	40	Fill	—	<0.1	—
W21R-4880	37701	390	400	Monzonite	—	<0.1	—
W21R-4881	37743	230	240	Upper Dwd	—	<0.1	—
W21R-4882	37750	20	30	Phonolite	—	<0.1	—
W21R-4883	37828	370	380	Intermediate Dwd	—	<0.1	—
W21R-4884	37921	610	620	Monzonite	—	<0.1	—
W21R-4885	37957	170	180	Phonolite	—	<0.1	—
W21R-4886	38027	450	460	Monzonite	—	<0.1	—
W21R-4887	38101	180	190	Upper Dwd	—	<0.1	—
W21R-4888	38179	130	140	Upper Dwd	—	<0.1	—
W21R-4889	38243	50	60	Upper Dwd	—	<0.1	—
W21R-4890	38067	160	170	Upper Dwd	—	<0.1	—
W21R-4891	38290	180	190	Phonolite	—	<0.1	—

Table D-24. Nitrate Results (Page 3 of 3)

Hole ID	Sample ID	From	To	Rock Type	pH	NO3 (mg/L)	AA Value
W21R-4892	38366	20	30	Phonolite	—	<0.1	—
W21R-4893	38483	280	290	Upper Dwd	—	<0.1	—
W21R-4894	38582	330	340	Upper Dwd	—	<0.1	—
W21R-4895	38693	760	770	Monzonite	—	<0.1	—
W21R-4896	38712	150	160	Phonolite	—	<0.1	—
W21R-4897	38829	340	350	Intermediate Dwd	—	<0.1	—
W21R-4898	38946	520	530	Intermediate Dwd	—	<0.1	—
W21R-4899	39008	30	40	Phonolite	—	<0.1	—
W21R-4900	39131	690	700	Monzonite	—	<0.1	—
W21R-4901	39174	270	280	Upper Dwd	—	<0.1	—
W21R-4902	39288	790	800	Monzonite	—	<0.1	—
W21R-4903	39297	80	90	Phonolite	—	<0.1	—
W21R-4904	39344	140	150	Upper Dwd	—	<0.1	—
W21R-4905	39422	430	440	Intermediate Dwd	—	<0.1	—
W21R-4907	39539	640	650	Monzonite	—	<0.1	—
W21R-4908	39599	390	400	Monzonite	—	<0.1	—
W21R-4909	39681	320	330	Upper Dwd	—	<0.1	—
W21R-4910	39761	180	190	Icebox Shale	—	<0.1	—
W21R-4911	39844	90	100	Phonolite	—	<0.1	—
W21R-4912	39959	280	290	Intermediate Dwd	—	<0.1	—
W21R-4913	40053	670	680	Monzonite	—	<0.1	—
W21R-4914	40117	390	400	Intermediate Dwd	—	<0.1	—
W21R-4915	40217	450	460	Monzonite	—	<0.1	—
W21R-4916	40275	220	230	Monzonite	—	<0.1	—
W21R-4917	40405	610	620	Monzonite	—	<0.1	—
W21R-4918	40419	60	70	Monzonite	—	<0.1	—
W21R-4919	40531	320	330	Monzonite	—	<0.1	—

Table D-25. Modified Acid/Base Accounting Static ARD Potential Test Results

		Sulfur, weight percent (as S)											
Sample I.D.	Paste pH	Total	Hot Water Rinse Residue	HCl Rinse Residue	HNO ₃ Rinse Residue	H ₂ O-Soluble Sulfate	Non-H ₂ O Sulfate Sulfur	Pyritic Sulfur	Potential Acid Generating Sulfur	AGP ¹⁾	ANP ²⁾	NNP	Ratio
W21R-4748 160-180 HC-1	7.6	0.15	0.15	0.09	0.05	<0.04	0.06	0.04	0.04	1.3	2.6	1.4	2.0
W21R-4749 140-160 HC-2	7.4	0.35	0.25	0.15	0.10	0.10	0.11	0.05	0.15	4.7	2.1	-2.5	<1.2
W21R-4753 540-590 HC-3	8.9	0.07	0.06	<0.04	<0.04	<0.04	0.06	<0.04	<0.04	<1.2	11.7	11.4	19.5
W21R-4755 30-40 HC-4	7.7	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<1.2	5.2	4.5	8.6
W21R-4767 HC-5	8.8	0.18	0.09	0.11	<0.04	0.08	<0.04	0.11	0.20	6.2	5.2	<1.2	<1.2
W21R-4771 HC-6	8.5	0.05	0.05	<0.04	<0.04	<0.04	0.05	<0.04	<0.04	<1.2	13.1	13.0	21.8
W21R-4772 HC-7	8.8	0.14	0.12	0.04	<0.04	<0.04	0.12	<0.04	<0.04	<1.2	3.7	3.0	6.1
W21R-4774 HC-8	7.6	0.09	0.09	0.06	<0.04	<0.04	<0.04	0.06	0.06	2.0	2.1	<1.2	<1.2
1) AGP based on Potential Acid Generating Sulfur (PAG-S) content (%S ⁼ x 31.25). AGP, ANP and NNP in units of tons CaCO ₃ equivalents per 1,000 tons of solids.													
2) ANP determined by titration as per Nevada Modified Sobek ABA procedure with siderite correction. ANP reported in units of tons CaCO ₃ equivalents per 1,000 tons of solids.													
SVL Report No. X2C0401													

Crystal Hocking

From: Jillian B. Miller <JMiller@energylab.com>
Sent: Monday, September 26, 2022 1:48 PM
To: Kenan Sarratt
Subject: RE: ABA method description

Hi Kenan,

Here is a summary:

Is this what you are looking for?

Acid-base potential is calculated from acid potential and neutralization potential. A positive result indicates an excess of lime, a negative result indicates a potential lime deficiency.

Acid potential is performed using the Modified Sobek Method. It is calculated from a sample that is leached with hot water to remove the soluble forms of sulfur(i.e., sulfate). The sulfur content of the treated sample is then analyzed on the LECO SC632 Sulfur Analyzer. The result is used to calculate the acid potential.

Neutralization potential is performed using USDA Method 23 C and the Modified Sobek Method. It measures the amount of neutralizing bases present in overburden materials and other soil and waste samples.

Net Neutralization Potential is calculated as acid neutralization-generation potential and the acid neutralization potential/generation potential (ANP/AGP) ratio is determined.

Energy Laboratories, Inc.

Trust our People. Trust our Data.

Jillian Miller | Project Manager | Billings, MT
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From: Kenan Sarratt <ksarratt@coeur.com>
Sent: Monday, September 26, 2022 12:46 PM
To: BillingsPM <billingspm@energylab.com>
Subject: ABA method description

Could I get a description of the ABA (Sobek Modified) from you guys?
Thanks



Kenan Sarratt | Chief Geologist

Acid-Base Account including the following parameters:

Total Sulfur
Sulfate Sulfur
Sulfide Sulfur
Residual Sulfur
Neutralization Potential
SMP Lime Requirement

Reference: EPA-600/2-78-054. Field and Laboratory Methods
Applicable to Overburdens and Minesoils. Industrial
Environmental Research Laboratory, Office of
Research and Development U.S. EPA, Cincinnati

EPA-670/2-74-070. Mine Spoil Potentials for Soil
and Water Quality. National Environmental Research
Center, Office of Research and Development, U.S.
EPA, Cincinnati.

These procedures are modified in the following method(s)

Modified ABP Procedure

The following narrative details a modified procedure for the acid-base account which takes into account recent research conducted by the USGS on sulfur forms in hard-rock mine waste. In addition, it takes into account the presence of some of the acid-forming sulfate minerals likely to be present in our mine waste samples. Attached are detailed descriptions of each method including:

- o neutralization potential
- o modified acid-base account
- o SMP buffer

1.1 Measurement of Potential Acidity

Generation of acidity from oxidation of sulfide-rich mine waste is a commonly observed environmental problem. (Caruccio 1968, Sobek and others 1978). It is important to measure the amount of potential acidity that may be formed by mine waste materials. For most soils, the lime requirement is the amount necessary to neutralize the "active" or "titratable acidity" which is a function of the soil pH and its buffering capacity. Sulfide-rich soils also have "residual acidity" which may be released over many years. Oxidation of pyrite and other sulfides forms sulfuric acid. Research on coal overburden in the Eastern U.S. indicated that residual acidity is a function of sulfide sulfur and to an extent organic sulfur. Sulfate is already oxidized thus does not contribute to acid generation.

Several methods have been devised for determining the lime required to neutralize acidity. Methods based on measurement of titratable acidity (McLean and others 1966, McLean 1982, Peech 1965) have been used to predict lime requirement for most natural soils. The SMP Buffer method (Shoemaker and others 1961) has received wide acceptance as a standard method for measuring titratable acidity.

The "acid-base accounting" method has been used to calculate potential acid release from sulfide-rich materials (Smith and others 1976, Sobek and others 1978, Sturey and others 1982). These methods have been criticized as overestimating lime requirement because coarse sulfide materials are not reactive or may be coated with iron oxides (Burt and Caruccio 1986) and because organic sulfur was shown to be less acid-producing than inorganic sulfur (Sullivan and Sobek 1982).

1.2. Proposed Methods

Tailings material is unlike coal overburden in being low in organic sulfur. Therefore sulfide sulfur gives a good indication of maximum residual acidity. Sobek and others (1978) noted that lime required in tons per acre to neutralize residual acidity is percent sulfide sulfur times 31.25. A modified acid-base account method for determining lime rate based on non-sulfate inorganic sulfur may be most appropriate for tailings.

Many workers have found that the acid-base account as developed by Sobek and others (1978) may not accurately predict potential acid production. The method has been modified to account for some of these potential problems. The 1:7 HNO₃ digestion performed overnight at room temperature may not be adequate to remove all sulfides (Larry Jackson, USGS, personal communication; Gary Bigham, personal communication). Jackson (personal communication) suggested using the same acid normality but heating the solution. A less than 100 mesh samples size has also been recommended to liberate all micro-crystalline pyrite from the silicate matrix.

Bigham (1987) described a number of problems encountered using the standard Acid-Base Account methods on tailings and mine waste at the Anaconda Smelter site. Discussions with Bigham indicate that modifications suggested in this document are consistent with the analytical results obtained at the Anaconda Smelter site. Further, extractions will be consistent (comparable) with those used at the Smelter site. Potential acid production for the Anaconda site was predicted based on total sulfur minus HCl leach sulfur (assumed to be sulfate).

The sulfate removal step (leaching with 50 ml 2:3 HCl) may also remove many acid-forming sulfide and sulfate minerals. Jackson (personal communication) has shown that sphalerite, pyrrhotite, chalcopyrite and a number of potential acid-formers are dissolved by the HCl solution typically used for sulfate removal. In addition, many acid-forming sulfate minerals may form in oxidized pyritic mine waste (Van Breemen 1982, Nordstrom 1982). Jarosite is the most prevalent acid-forming sulfate ($\text{KFe}_3(\text{SO}_4)_2(\text{OH})_6$). Jarosite liberates 3 moles of H^+ when it undergoes hydrolysis to form goethite (FeOOH). Alunite which is the aluminum counterpart of jarosite may undergo similar reactions. Nordstrom (1982) discussed a complex series of variably hydrated ferrous and ferric sulfate minerals. Many of these highly soluble minerals (melanterite, rozenite) liberate acid when dissolution releases ferrous iron into solution. Two soluble sulfur removal steps will be used in the modified acid-base account proposed. Hot distilled water will be leached through the sample to remove sulfate until the EC of the leachate is less than a threshold value. In addition, the traditional HCl leach will also be used. Care should be taken in interpretation of the acid-base account results. Hydrated ferrous sulfates may be liberated by the distilled water rinse but not alunite or jarosite.

The neutralization potential method (3.2.3) will be used to assess the amount of acid buffering capacity of the mine waste material. Sources of neutralization capacity include calcium carbonate, clay minerals, organic matter and other soil constituents. The SMP buffer lime requirement test will also be run to help interpret the active acidity of tailings material (for samples where the neutralization potential is less than zero).

The methods for the neutralization potential (3.2.3), total sulfur determination (3.2.4), the modified acid-base account (3.2.6), and the SMP buffer test are attached.

Total sulfur determination performed on an untreated sample as well as on the distilled water, HCl, and HNO₃ sub-samples will be compared to find the sulfide-S content of the tailings. Acid dissociable sulfide and moderately insoluble sulfate S content will also be assessed as well as the residual S level.

The lime requirement for each soil will be based on a technical assessment of the amount of sulfur in each fraction, and on the presumed chemical composition and likely reactions within each S form. As an example, a calculation of lime requirement for a typical mine waste sample is shown below.

$$\text{LR (tons/acre)} = [\text{HNO}_3\text{-S} * 31.25 + \text{HCl-S} * 15.6 + \text{SMP buffer}] * 1.25$$

HNO₃-S = sulfide S

HCL -S = insoluble sulfate S

The lower multiplier (15.6) for the insoluble sulfate S fraction indicates the smaller amount of acidity (3 moles/mole S) that can be formed from this fraction. The multiplier of 1.25 is a mixing design safety factor to account for inadequate sample mixing.

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ACID POTENTIAL AND FORMS OF SULFUR

1.0 Sample Preparation

Samples should be dried thoroughly and ground to 100 mesh. Samples should be prevented from excess contact with metal (iron) grinding apparatus. After grinding, mix sample very well.

1.1 Analysis of Sulfur Forms

1.1.1 Total Sulfur

Analyze the untreated sample on the Leco sulfur determinator.

1.1.2 Hot Water Wash (Water Soluble Sulfur)

Place a #41 Whatman Filter in a 15 cm diameter funnel. In the filter place 3-5 grams of sample. Wash the sample with 150 ml of hot (boiling) deionized water (DI). Then rinse with 200 ml of room temperature DI. Dry and mix the sample. Analyze the sample on the Leco sulfur determinator. The sulfur detected here is the non-sulfate sulfur.

1.1.3 HCl Wash

Place a #41 Whatman Filter in a 15 cm diameter funnel. In the filter place 3-5 grams of sample. Wash the sample with 150 mls of 2:3 HCl. Rinse very thoroughly with at least 300 mls of DI. Dry and mix the sample. Run the sample on the Leco determinator.

1.1.4 HNO3 Wash

Weigh 1 gram of sample into a 150 ml beaker. Add 50 ml of 1 + 7 HNO3 to the beaker. Put watch glass over the beaker and heat to near boiling for at least 6 hours. Let sample cool overnight. Rinse the solution into a #41 Whatman filter and rinse with 200 ml of DI. Dry and mix the sample. Analyze on the Leco sulfur determinator.

2.0 Calculations

Non-sulfate Sulfur = Total S after hot water leach

Hot Water Extractable Sulfur (mostly sulfates) =
(Total S of untreated sample) minus (Total S after hot water leach)

HCl Extractable Sulfur (acid dissociable sulfides and less soluble sulfates) =
(Total S after hot water leach) minus (Total S after HCl leach)

HNO3 Extractable Sulfur (mostly pyrite or other acid forming sulfides) =
(Total S after HCl leach) minus (Total S after HNO3 leach)

Residual Sulfur (mostly organic Sulfur {should be near zero}) =
Total Sulfur after HNO3 treatment

Acid Potential, meq/100 g = Non-sulfate sulfur, % x 62.5

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FAX (406) 252-6069 • 1-800-735-4489**NEUTRALIZATION POTENTIAL****1.0** **Principles**

The amount of neutralizing bases, including carbonates, present in overburden materials is found by treating a sample with a known excess of standardized hydrochloric acid. The sample and acid are heated to insure that the reaction between the acid and the neutralizers goes to completion.

The calcium carbonate equivalent of the sample is obtained by determining the amount of unconsumed acid by titration with standardized sodium hydroxide.

2.0 **Chemicals**

2.2 Sulfuric acid, 0.02N certified reagent.

2.3 Sodium hydroxide (NaOH), approximately 0.5 N: Dissolve 20.0 g of NaOH pellets in carbon dioxide-free water and dilute to 1 liter. Protect from CO₂ in the air with ascarite tube. Standardize solution by placing 50 ml of 0.02N H₂SO₄ in a beaker and titrating with the prepared 0.5 N NaOH to a phenolphthalein endpoint. Calculate the Normality of the NaOH using the following equation:

$$N_2 = (N_1 V_1) / V_2, \text{ where:}$$

V₁ = Volume of H₂SO₄ used.

N₁ = Normality of H₂SO₄ used.

V₂ = Volume of NaOH used.

N₂ = Calculated Normality of NaOH.

2.4 Hydrochloric acid (HCl), approximately 0.5 N: Dilute 42 ml of concentrated HCl to a volume of 1 liter with distilled water. Standardize the solution by placing 20 ml of the known Normality NaOH prepared in 2.3 in a beaker and titrating with the prepared HCl to a phenolphthalein endpoint. Calculate the Normality of the HCl using the following equation:

$$N_1 = (N_2 V_2) / V_1, \text{ where:}$$

V₂ = Volume of NaOH used.

N₂ = Normality of NaOH used.

V₁ = Volume of HCl used.

N₁ = Calculated Normality of HCl.

3.0 **Procedure**

3.1 Weight 5.00 g of sample (less than 60 mesh) into a 250 ml beaker.

3.2 Carefully add 50.0 ml of 0.5N HCl into the flask containing sample.

3.3 Heat nearly to boiling, swirling flask every 5 minutes, until the reaction is complete. NOTE: The reaction is complete when no gas evolution is visible and particles settle evenly over the bottom of the flask.

- 3.6 Measure the pH of the solution. If it is < 1.0 , proceed with step 3.7. If the pH ≥ 1.0 , repeat the test starting at 3.1 using one half as much soil.
- 3.7 Titrate using 0.5 N NaOH, to pH 7.0 using an electrometric pH meter and buret.
- 3.8 Run a blank by titrating 50 ml of 0.5 N HCl with 0.5 N NaOH.

4.0

Calculations

- 4.1 Neutralization Potential, Tons CaCO_3 /1000 Tons material =

$$(B-V) \times N \times 50 / \text{Sample grams}$$

Where:

B = Volume of NaOH blank titration.

V = Volume of NaOH sample titration.

N = Normality of NaOH

- 4.2 Lime, % = (Neutralization Potential, Tons CaCO_3 /1000 Tons material)/10

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ACID BASE POTENTIAL**1.0 Summary**

Acid-base potential is calculated from acid potential and neutralization potential.

2.0 Calculations

- 2.1 Acid potential is usually reported as meq H/100 g of soil. Convert to Tons CaCO_3 /1000 Tons of material.

Acid potential, Tons CaCO_3 /1000 Tons = (Acid potential, meq/100g)/2

- 2.2 Acid base potential⁽¹⁾ = Neutralization potential⁽¹⁾ - acid potential⁽¹⁾

A positive result indicates an excess of lime, a negative result indicates a potential lime deficiency.

⁽¹⁾ Tons CaCO_3 /1000 Tons Material.



Fire Assay Procedure – Au-AA23 & Au-AA24
Fire Assay Fusion, AAS Finish

Sample Decomposition: Fire Assay Fusion (FA-FUS01 & FA-FUS02)

Analytical Method: Atomic Absorption Spectroscopy (AAS)

A prepared sample is fused with a mixture of lead oxide, sodium carbonate, borax, silica and other reagents as required, inquarted with 6 mg of gold-free silver and then cupelled to yield a precious metal bead.

The bead is digested in 0.5 mL dilute nitric acid in the microwave oven, 0.5 mL concentrated hydrochloric acid is then added and the bead is further digested in the microwave at a lower power setting. The digested solution is cooled, diluted to a total volume of 4 mL with de-mineralized water, and analyzed by atomic absorption spectroscopy against matrix-matched standards.

Method Code	Element	Symbol	Units	Sample Weight (g)	Lower Limit	Upper Limit	Default Overlimit Method
Au-AA23	Gold	Au	ppm	30	0.005	10.0	Au-GRA21
Au-AA24	Gold	Au	ppm	50	0.005	10.0	Au-GRA22



**Fire Assay Procedure – Ag-GRA21, Ag-GRA22, Au-GRA21 and
Au-GRA22
Precious Metals Gravimetric Analysis Methods**

Sample Decomposition: Fire Assay Fusion (FA-FUSAG1, FA-FUSAG2, FA-FUSGV1 and FA-FUSGV2)
Analytical Method: Gravimetric

A prepared sample is fused with a mixture of lead oxide, sodium carbonate, borax, silica and other reagents in order to produce a lead button. The lead button containing the precious metals is cupelled to remove the lead. The remaining gold and silver bead is parted in dilute nitric acid, annealed and weighed as gold. Silver, if requested, is then determined by the difference in weights.

Method Code	Element	Symbol	Units	Sample Weight (g)	Detection Limit	Upper Limit
Ag-GRA21	Silver	Ag	ppm	30	5	10,000
Ag-GRA22	Silver	Ag	ppm	50	5	10,000
Au-GRA21	Gold	Au	ppm	30	0.05	1000
Au-GRA22	Gold	Au	ppm	50	0.05	1000



Fire Assay Procedure – Au-AA23 & Au-AA24
Fire Assay Fusion, AAS Finish

Sample Decomposition: Fire Assay Fusion (FA-FUS01 & FA-FUS02)

Analytical Method: Atomic Absorption Spectroscopy (AAS)

A prepared sample is fused with a mixture of lead oxide, sodium carbonate, borax, silica and other reagents as required, inquarted with 6 mg of gold-free silver and then cupelled to yield a precious metal bead.

The bead is digested in 0.5 mL dilute nitric acid in the microwave oven, 0.5 mL concentrated hydrochloric acid is then added and the bead is further digested in the microwave at a lower power setting. The digested solution is cooled, diluted to a total volume of 4 mL with de-mineralized water, and analyzed by atomic absorption spectroscopy against matrix-matched standards.

Method Code	Element	Symbol	Units	Sample Weight (g)	Lower Limit	Upper Limit	Default Overlimit Method
Au-AA23	Gold	Au	ppm	30	0.005	10.0	Au-GRA21
Au-AA24	Gold	Au	ppm	50	0.005	10.0	Au-GRA22

July 13, 2009

Standard Operating Procedure for the Meteoric Water Mobility Procedure (MWMP)

Document Title: Standard Operating Procedure for the Meteoric Water Mobility Procedure.

Document Control Number: S – MWMP - 1.0

Location: Sheridan Lab

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Plan Coverage:

Standard Operating Procedure for the Meteoric Water Mobility Procedure (MWMP).

Lab Representative: _____

Lab Supervisor: _____

Standard Operating Procedure for the Meteoric Water Mobility Procedure

1.0 Scope and Application.

- 1.1 This method follows a procedure developed by the Nevada Department of Environmental Protection (NDEP 1996) and outlined in ASTM-E2242 to evaluate the potential for dissolution and mobility of certain constituents within a mine rock sample using simulated meteoric water.

2.0 Summary of Method.

- 2.1 A mine rock sample is loaded into a 6-inch diameter PVC column and extracted for at least 24 hours using a single pass of Type II reagent grade deionized water. The resulting effluent is then submitted for a variety of chemical analyses.

3.0 Definitions.

- 3.1 MWMP – Meteoric Water Mobility Procedure

4.0 Interferences, Considerations.

- 4.1 Mine rock samples that have a particularly high clay concentration may form a layer within the column that is impermeable to continuing water infiltration. In addition, samples with a relatively high degree of fine material may clog filters, limiting infiltration into the effluent collection bucket. A clean glass rod may be used during the analysis to poke holes through the barrier or clean the filter, and hopefully allow for a greater degree of infiltration. However, the development of these situations can significantly interfere with test continuation, and during these circumstances, a different extraction method may be advised.

5.0 Sample Collection, Preservation, and Handling.

- 5.1 Mine rock samples should be evaluated to ensure that only minus 2 inch material is loaded into the extraction column.
- 5.2 The extraction device must be loaded with material gently, with material dropping from no more than 24 inches to minimize sample compaction.

6.0 Safety.

- 6.1 Follow standard laboratory safety procedures.
- 6.2 Wear gloves and safety glasses when working with the soils.
- 6.3 Some MWMP materials may have high concentrations of particularly deleterious chemical constituents (i.e., arsenic, cyanide). Avoid touching the rock material or extract, and avoid breathing dust generated by the loading of the extraction device.

7.0 Apparatus & Materials.

- 7.1** Extraction device consisting of a 6-inch diameter round PVC column, which measures approximately 14 to 18 inches in length. The extraction device contains a "punch plate" on its lower end, upon which mine rock rests. An inert filter covers the plate to ensure that fine material does not migrate from the sample into the effluent collection container.
- 7.2** Effluent collection container, and associated tubing and fittings that mate the container to the extraction column.
- 7.3** Water delivery system (either pump driven or constant head) that ensures a consistent and accurate delivery rate for the extraction water.
- 7.4** Laboratory balance capable of measuring up to 8 kilograms of material to the nearest 1.0 gram.
- 7.5** Drying pans for moisture content determination.

8.0 Reagents and Consumable Materials.

- 8.1** Type II Reagent Grade deionized water.
- 8.2** 15-centimeter qualitative filter paper, such as Advantec No. 232.

9.0 Calibration and Standardization.

- 9.1** Prior to initiation of the MWMP, the flow rate from the water system should be tested to ensure the proper delivery of extraction water. To test, the drips from the water system can be collected in a graduated cylinder over a period of five minutes. The graduated cylinder should then, of course, read as five times the desired flow rate (in milliliters/minute), with an allowable error of less than 1 milliliter.

10.0 Quality Control.

- 10.1** A sample consisting of blank extraction water is submitted with each batch of client samples. This blank sample can be collected from the water delivery system (i.e., system blank), or by running the extraction water from the delivery system through a cleaned extraction device (with filters) and collecting the effluent in a cleaned collection bucket (i.e., method blank).

11.0 Procedure.

- 11.1** Determine the moisture percentage of the mine rock sample to be extracted prior to initiation of the meteoric water method. The moisture percentage determination is as follows:

$$\% \text{Moisture} = [(\text{wet sample \& pan}) - (\text{dry sample \& pan})] / [(\text{dry sample \& pan}) - (\text{pan})] * 100$$

The moisture percentage is then considered when determining the quantity of material to be added to the extraction column. The method requires that the sample equivalent of 5

kilograms dry mass be loaded into the extraction device. To determine the quantity of “wet” sample material equivalent to 5 kilograms dry mass, the following equation is used:

$$\text{Sample mass for column analysis (g)} = 5000 * [1 + (\% \text{moisture}/100)]$$

Please note, on occasion a sample quantity smaller than 5 kilograms (dry mass) may be required because insufficient sample is received or the sample that is received contains a relatively high moisture content. During these instances, a smaller sample size may be utilized, but this change to the methodology must be reported to the client and accounted for in the following steps (see Step 11.4).

- 11.2** Prepare the extraction column for use by thoroughly cleaning each part with a Neutrad solution, rinsing each part with deionized water, and properly assembling the extraction device. Ensure that all joints are sealed with Parafilm to minimize the potential for contamination by dust and sample debris.
- 11.3** Place two 15-centimeter filters at the bottom of the extraction column. Load the appropriate quantity of sample material into the extraction column, as determined by the formula presented in Step 11.1 above. Drop sample material into the column from no higher than 24 inches. Level out the top of the sample material. Place one 15-centimeter filter on top of the level material. The filter will ensure that extraction water is wicked/distributed across the sample material from the single drip point.
- 11.4** Prepare the water distribution system by rinsing and purging the water delivery pipe. Start the water distribution system. Begin the extraction water drip at a rate that will apply a quantity of extraction water over a 24-hour period equivalent to the quantity of dry mine rock sample. In other words, the extraction water volume applied over a 24-hour period and the dry mass of the sample should be in a 1:1 ratio. For a sample containing the recommended 5 kilograms (dry mass) of material, extraction water should be applied at a rate of approximately 3.5 milliliters per minute. For other quantities of mine rock samples, the following formula may be used to determine the extraction water rate:

$$\text{Extraction water rate (ml/min)} = \text{sample dry mass (g)} / (60 * 24)$$

Please note, in a constant-head water delivery system, the flow rate adjustment must be made by altering the length of the 0.020-inch diameter tubing. This adjustment can be made on a proportion basis, relative to the base length for the standard flow rate (i.e., 5 inches of tubing for a flow rate of 3.5 ml/min). Always check the flow rate prior to initiation of any MWMP extraction using the methods outlined in Section 9.0 (Calibration and Standardization).

- 11.5** Evaluate the quantity of effluent collected after 24 hours. If the quantity of effluent collected is not equivalent to the quantity of mine rock sample utilized (dry mass), then the extraction should continue at the same rate until the quantity of effluent is equivalent to the mass of the mine rock sample utilized (dry mass). For example, for a 5-kilogram (dry mass) sample, allow the extraction to continue until 5 liters of effluent is collected. The additional time required beyond the 24-hour target extraction period is due to the absorption of extraction water by samples exhibiting initial (feed) moisture contents below their water holding capacities.
- 11.6** Discontinue the extraction upon collection of the required effluent volume. Distribute effluent into labeled sample bottles as necessary for the required analyses. Submit the sample bottles to Sample Receiving for sample filtration, preservation and analysis, as necessary.

- 11.7** Allow the extraction column and wetted sample to drain until the surface of the material no longer glistens and the effluent drip reaches a negligible rate. Remove a representative sample from the mine rock column and determine a moisture percentage for the post-extraction material, using the moisture percentage formula presented in Step 11.1.

12.0 Calculations.

- 12.1** Each calculation required for the meteoric water extraction has been presented in context in Section 11.0 (Procedure).

13.0 Reporting

- 13.1** The following information and values must be reported to the client:

- Procedure utilized for the extraction.
- Alterations to the standard extraction procedure, including any changes to the quantity of mine rock material used.
- pH of the extraction fluid.
- Feed and retained moisture contents of the mine rock sample.
- Total dry mass of the mine rock material utilized for the extraction procedure.
- Time of contact in the extraction device.
- Results of the requested analyses related to the extraction effluent.

14.0 Precision & Accuracy

- 14.1** All quality control measures related to the analysis of extraction effluent should meet IML guidelines.

15.0 Comments

- 15.1** None.

16.0 References

- 16.1** Nevada Mining Association (1996), Meteoric Water Mobility Procedure (MWMP), Standardized Column Percolation Test Procedure, Nevada Mining Association, Reno, NV, 5p.



KINETIC TEST PROCEDURE – HUMIDITY CELL

Cell Preparation

1kg of crushed (minus 1/4”) solid sample is typically used in the cell. For requested alterations please inform the Humidity Cell Account Manager.

Weekly Maintenance

Humidity Cells are on weekly cycles that alternate between the circulation of dry air and wet air over the samples to emulate the environment. Although this cycle can continue for 40 weeks or more, ALS Laboratory Group provides customized cell cycles to suit client-specific needs.

Leaching Process

Leaching is performed on a weekly basis. The first weekly leach uses 750mL de-ionized water while all subsequent leaches use 500mL. The leaching process includes filtering through a 0.45micron membrane filter prior to analysis.

Leachate analysis

Filtrates are analyzed the same day for pH and Conductivity. Other analyses that are usually done include Alkalinity, Acidity, Sulphate and a metals scan. The suite of analyses for humidity cells may vary and additional analysis are available upon request. Please communicate your required analytical suite prior to the set-up of the Humidity Cell(s).

Cell Closedown

Cell closure is done the same day as the final leach of the cell. An extraction procedure (3:1 water:solid ratio) on the cell residue followed by the same suite of analysis as listed in this quote is optional. Please inform the Humidity Cell Account Manager if you require the additional extraction procedure.

References

Guidelines and Recommended Methods for the prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia. Dr. William A. Price.

ASTM D5744-96 – Standard test Method for accelerated Weathering of Solid Material Using a Modified Humidity Cell

Nitrate Analysis Methodology

Rock samples were analyzed by Energy Labs for nitrate following methods described by Page et al [1982]¹. A summary extract of those methods is provided below.

A Lachat QuikChem AE apparatus was used for the analysis.

NO₃⁻ is extracted from soil by shaking with 2M KCl for 1 hour, the extract is filtered, NO₃⁻ in the extract is reduced to NO₂⁻ by passage through a column of copperized Cd, and the resulting NO₂⁻ is quantitated. In the analysis procedure, the NO₃⁻ in an aliquot of filtered soil extract is quantitatively reduced to NO₂⁻ by reaction with copperized Cd in a NH₄Cl matrix within the pH range of 5 to 10.

Reagents

1. Potassium chloride (KCl) solution, 2M.
2. Copperized Cd reagent: Treat a 50-g sample of Cd metal having a size 1 mm in diam by 2 mm in length or smaller with 250 ml of 6N hydrochloric acid (HCl) for 1 min. Decant the HCl, and thoroughly wash the Cd metal with deionized water. Twice treat the powdered Cd with 250 ml of a 2% (wt/vol) cupric sulfate pentahydrate (CuSO₄ *5H₂O) solution that is separated by a wash with deionized water. Decant the CuSO₄*5H₂O solution, and thoroughly wash the copperized Cd with deionized water until all blue and light gray color disappears from the wash water. Place the copperized Cd into reducing columns.
3. Ammonium chloride (NH₄Cl) solution, concentrated. Dissolve 100 g of NH₄Cl in 500 ml of deionized water. Store in a glass or plastic bottle.
4. Ammonium chloride (NH₄Cl) solution, diluted. Dilute 50 ml of conc NH₄Cl solution to 2 liters with deionized water and store in a glass or plastic bottle.
5. Diazotizing reagent: Dissolve 0.5 g of sulfanilamide in 100 ml of 2.4M hydrochloric acid (HCl). Store the solution in a refrigerator at 4°C.
6. Coupling reagent: Dissolve 0.3 g of [N-(1-naphthyl)-ethylenediamine] hydrochloride in 100 ml of 0.12 M hydrochloric acid (HCl). Store the solution in a brown bottle in the refrigerator.
7. Standard nitrate (NO₃⁻) solution: Dissolve 0.3609 g of potassium nitrate (KNO₃) in deionized water, and dilute to 1 liter. If pure, dry KNO₃ is used, this solution contains 50 µg of NO₃⁻ -N/ml. Store the solution in a refrigerator.

¹ **Page, A.L., Miller, R.H., Keeney, D.R., 1982.** *Methods of Soil Analysis, Chemical and Microbiological Properties*, Second Edition, Number 9 (Part 2) in the series, Agronomy, American Society of Agronomy, Inc., and Soil Science Society of America, Inc., Madison, WI.

Procedure

1. Preparation of filtered soil extract.

2. Preparation of reduction column.

Fill the Pyrex columns with dilute NH_4Cl solution and pour in sufficient copperized Cd particles to give a depth of 20 cm. Ensure that all air bubbles are removed as the column is filled with copperized Cd, and drain off excess NH_4Cl solution. Wash the column thoroughly (10-pore volumes) with dilute NH_4Cl solution using a flow rate of about 8 ml/min. When the reducing columns are not in use, ensure that Cd metal is covered by at least 1-cm depth of dilute NH_4Cl solution.

Immediately before use of column for NO_3^- analysis, add 1 ml of conc NH_4Cl solution (reagent 3), and lower the liquid level to the top of the column. Add 75 ml of dilute NH_4Cl solution (reagent 4) to the reservoir on top of the column, attach a 100-ml volumetric flask to the rubber stopper on the column outlet, and pass the NH_4Cl solution through the column at a rate of 100 ml/min by regulating the vacuum and the stopcock position.

3. Analysis of extract.

Drain excess NH_4Cl solution from the column such that the solution level is even with the top of the metal in the column. Pipette 1 ml of the conc NH_4Cl solution (reagent 3) onto the top of the column, and add an aliquot of 2M KCl extract containing not more than 20 μg of NO_3^- -N (aliquot size will normally vary from 2 to 5 ml). Attach a 100-ml volumetric flask to the rubber stopper on the column outlet, and allow the treated extract to enter the copperized Cd bed by draining NH_4Cl solution from the lower end of the column. Use 2 ml of dilute NH_4Cl solution to wash the inside of the column, and drain the washings into the column bed. Add 75 ml of dilute NH_4Cl solution to the reservoir on top of the column, and begin the flow through the column at a rate of 110 ml/min. Collect the entire volume of eluent in the 100-ml volumetric flask. After elution is complete, add 2 ml of diazotizing reagent to the contents of the volumetric flask and mix. After 5 min, add 2 ml of the coupling reagent. Mix the solution, bring to volume, and allow to stand for 20 min. Measure the absorbance of the solution at a wavelength of 540 nm against a reagent blank solution.

Determine the NO_3^- -N concentration in the soil extract by reference to a calibration curve obtained with samples containing 0, 2, 4, 6, 10, and 20 μg of NO_3^- -N. To prepare this curve, dilute 20 ml of the standard NO_3^- -N solution (reagent 7) to 500 ml with 2M KCl, and mix the solution thoroughly. Then add 0, 1, 2, 3, 5, and 10 ml of the diluted NO_3^- -N standard to the copperized Cd reducing column, and perform the reduction and color development as described.

The eluent coming from the Cd reduction column contains NO_2^- initially present in the soil extract plus that formed from reduction of NO_3^- . Therefore, to determine the actual NO_3^- content of the extract, NO_2^- must be removed before placement of the extract on the column or a separate NO_2^- measurement must be performed on the extract. Nitrate in the soil extracts may conveniently be quantitated by the Griess-Ilosvay procedure.

Wharf Resources Rock Codes	
1 or 2	Upper Deadwood sandstone and scolihus zone
3 or 4	Intermediate Deadwood - shale/limestone/sandstone
6	Monzonite Porphyry
7	Phonolite Porphyry
10	Lower Contact Deadwood
11	Precambrian

Crystal Hocking

From: Tom Patten <Tom.Patten@pacelabs.com>
Sent: Monday, September 26, 2022 1:49 PM
To: Kenan Sarratt
Cc: Ian Scofield; John Jacobs; Crystal Herman; Steve Holzerland; Brandon Sadler
Subject: RE: Pace Analytical Data: Wharf Resources, Waste Rock - Nitrate Bottle Roll, S2203073

Kenan,

The MWMP is 5 kg of minus 2inch material in a column, the column is leached with 5 liters over 1-2 days.

The Bottle rolls are 400 grams of minus ½ inch material, 400ml is placed in the bottle and shaken/rolled for 24 hours.

Since these are both 1:1 leachings they should be somewhat comparable.

Please let me know if you have any questions or comments

Thanks,

Tom Patten
Lab Services Manager | Pace Wyoming
1673 Terra Ave, Sheridan, WY 82801
o: 307.461.4987 | m: 307.751.0325 | pacelabs.com



From: John Jacobs <John.Jacobs@pacelabs.com>
Sent: Monday, September 26, 2022 12:52 PM
To: Tom Patten <Tom.Patten@pacelabs.com>; Crystal Herman <Crystal.Herman@pacelabs.com>
Cc: Ian Scofield <Ian.Scofield@pacelabs.com>
Subject: FW: Pace Analytical Data: Wharf Resources, Waste Rock - Nitrate Bottle Roll, S2203073

Hello~

I've highlighted the question below.
Any insight would be appreciated.
Thank you.

John



Standard Test Method for Laboratory Weathering of Solid Materials Using a Humidity Cell¹

This standard is issued under the fixed designation D5744; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

^{ε1} NOTE—Editorially updated Research Report footnote information in Section 13 in December 2013.

1. Scope

1.1 This kinetic test method covers a laboratory weathering procedure that (1) enhances reaction-product transport in the aqueous leach of a solid material sample of specified mass, and (2) measures rates of weathering-product mass release. Soluble weathering products are mobilized by a fixed-volume aqueous leach that is performed and collected weekly. Leachate samples are analyzed for pH, alkalinity/acidity, specific conductance, sulfate, and other selected analytes.

1.1.1 This test method is intended for use to meet kinetic testing regulatory requirements for mining waste rock and ores sized to pass a 6.3-mm (0.25-in.) Tyler screen.

1.1.2 Interlaboratory testing of this method has been confined to mine waste rock. Application of this test method to metallurgical-processing waste (for example, mill tailings) is outside the scope of the test method.

1.2 This test method is a modification of a laboratory weathering procedure developed originally for mining wastes(1-3).² However, it may have useful application wherever gaseous oxidation coupled with aqueous leaching are important mechanisms for contaminant mobility.

1.3 This test method calls for the weekly leaching of a well-characterized solid material sample (weighing at least 1000-g), with water of specified purity, and the collection and chemical characterization of the resulting leachate. Test duration is determined by the user's objectives of the test.

1.4 As described, this test method may not be suitable for some materials containing plastics, polymers, or refined metals. These materials may be resistant to traditional particle size reduction methods.

1.5 Additionally, this test method has not been tested for applicability to organic substances and volatile matter.

1.6 This test method is not intended to provide leachates that are identical to the actual leachate produced from a solid material in the field or to produce leachates to be used as the sole basis of engineering design.

1.7 This test method is not intended to simulate site-specific leaching conditions. It has not been demonstrated to simulate actual disposal site leaching conditions. Furthermore, the test is not designed to produce effluents that are in chemical equilibrium with the solid phase sample.

1.8 This test method is intended to describe the procedure for performing the laboratory weathering of solid materials. It does not describe all types of sampling and analytical requirements that may be associated with its application.

1.9 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.9.1 *Exception*—The values given in parentheses are for information only.

1.10 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:³

D75 Practice for Sampling Aggregates

D276 Test Methods for Identification of Fibers in Textiles

D420 Guide to Site Characterization for Engineering Design and Construction Purposes (Withdrawn 2011)⁴

¹ This test method is under the jurisdiction of ASTM Committee D34 on Waste Management and is the direct responsibility of Subcommittee D34.01.04 on Waste Leaching Techniques.

Current edition approved Sept. 1, 2013. Published September 2013. Originally approved in 1996. Last previous edition approved in 2012 as D5744-12. DOI: 10.1520/D5744-13E01.

² The boldface numbers in parentheses refer to the list of references at the end of this standard.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁴ The last approved version of this historical standard is referenced on www.astm.org.

- D653 Terminology Relating to Soil, Rock, and Contained Fluids
- D737 Test Method for Air Permeability of Textile Fabrics
- D1067 Test Methods for Acidity or Alkalinity of Water
- D1125 Test Methods for Electrical Conductivity and Resistivity of Water
- D1193 Specification for Reagent Water
- D1293 Test Methods for pH of Water
- D1498 Test Method for Oxidation-Reduction Potential of Water
- D2234/D2234M Practice for Collection of a Gross Sample of Coal
- D3370 Practices for Sampling Water from Closed Conduits
- E276 Test Method for Particle Size or Screen Analysis at No. 4 (4.75-mm) Sieve and Finer for Metal-Bearing Ores and Related Materials
- E877 Practice for Sampling and Sample Preparation of Iron Ores and Related Materials for Determination of Chemical Composition and Physical Properties
- E1915 Test Methods for Analysis of Metal Bearing Ores and Related Materials for Carbon, Sulfur, and Acid-Base Characteristics
- E2242 Test Method for Column Percolation Extraction of Mine Rock by the Meteoric Water Mobility Procedure
- D5744 Test Method for Laboratory Weathering of Solid Materials Using a Humidity Cell
- E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

3. Terminology

3.1 Definitions:

3.1.1 *acid-producing potential, AP, n*—maximum potential for a solid material sample to produce acidic effluent can be determined based on the total sulfur present in the sample.

3.1.1.1 *Discussion*—It is assumed that this sulfur is present as iron sulfides (for example, pyrite) (4). This assumption leads to overestimation of the acid-producing potential of samples containing non-ferrous sulfide minerals such as galena (PbS) or non-acid-producing sulfur-bearing minerals such as gypsum (CaSO₄). The AP is commonly converted to the amount of calcium carbonate required to neutralize the resulting amount of the acidic effluent produced by the oxidation of contained iron sulfide minerals; it is expressed as the equivalent tonnes of calcium carbonate per 1000 tonnes of solid material (3). The AP is, therefore, calculated by multiplying the percent of sulfur contained in the material by a stoichiometric factor of 31.2 (5).

3.1.2 *interstitial water, n*—residual water remaining in the sample pore spaces at the completion of the fixed-volume weekly leach.

3.1.3 *leach, n*—weekly addition of water to solid material that is performed either dropwise or by flooding for a specified time period.

3.1.4 *loading, n*—mass of a chemical species, which is the product of the species concentration and the mass of the weekly leachate collected.

3.1.5 *mill tailings, n*—finely ground ore processing waste (commonly passing a 150-μm [100-mesh screen]) resulting from the mill processing of ore.

3.1.6 *neutralizing potential, NP, n*—capacity of a solid material sample to neutralize an acidic effluent while maintaining a drainage pH of at least 6.0. NP is expressed in terms of tonnes of calcium carbonate equivalent per 1000 tonnes of solid material (3).

3.1.6.1 *Discussion*—NP can be estimated using several techniques, including the following (1) determining the amount of calcium and magnesium carbonate in the sample; (2) digesting the solid material with an excess of standardized acid and back titrating with a standardized base to measure and convert the residual acid to calcium carbonate equivalents (2, 6); and (3) determining the carbonate carbon content in the sample (for example Test Method E1915 acid base classification).

3.1.6.2 *Discussion*—The AP and NP are specifically applicable to the determination of AP from mining wastes comprised of iron-sulfide and carbonate minerals. These terms may be applicable to any solid material containing iron-sulfide and carbonate minerals.

3.1.6.3 *Discussion*—Calcium plus magnesium carbonate determination generally provides a reasonably accurate NP quantification for samples in which carbonate minerals are present. Digestion and back-titration techniques generally overestimate the capacity of mine waste samples to neutralize acid while maintaining drainage pH ≥ 6.0. These techniques can yield negative values if there is excess soluble acidity on the sample. Carbonate-carbon determinations will overestimate the capacity of mine-waste samples to neutralize acid if they contain metal carbonate minerals that are not net neutralizing (for example, iron carbonates such as siderite [FeCO₃] (7).

3.1.6.4 *Discussion*—AP and NP comprise most acid-base classifications and these two components have historically been determined by several different analytical methods (7). However, only one acid-base classification is currently an ASTM standard, Test Method E1915. Test Method E1915 uses either pyrolysis or chemical treatment of the mine-waste sample to speciate and quantify sulfide-sulfur and carbonate-carbon concentrations, which are expressed as acid-generating potential (AGP) and acid neutralizing potential (ANP), respectively. Through this speciation, it provides a better estimate of acid generation than historic AP determinations in which non-ferrous and non-acid-generating sulfur minerals are present (for example, galena [PbSO₄] and gypsum [CaSO₄], respectively).

3.1.7 *run-of-mine, adj*—usage in this test method refers to ore and waste rock produced by excavation (with attendant variable particle sizes) from open pit or underground mining operations.

3.1.8 *waste rock, n*—rock produced by excavation from open pit or underground mining operations that has an economic mineral content less than a specified economic cutoff value for metallurgical processing.

4. Summary of Test Method

4.1 This laboratory-weathering procedure is designed to enhance the mass release of acidity/alkalinity, metals, and other pertinent analytes from a sample of solid material weighing at least 1000 g. This is done by providing conditions conducive to

sample oxidation and then leaching the sample with a fixed-volume aqueous leach. Ratio of leach volume to sample mass is 0.5 : 1 or 1 : 1 depending upon the efficiency of sample wetting and amount of effluent required for chemical analyses. The weekly effluent produced is characterized for dissolved weathering products. This test method is performed on each sample in a cylindrical cell. Multiple cells can be arranged in parallel. This configuration permits the simultaneous testing of multiple splits of the same solid material sample, or of solid material samples each characterized by different compositions.

4.2 Two protocol options (Options A and B) comprise the test procedure, and these options differ only in the way that the oxygen is supplied to samples in the individual humidity cells. Option A protocol calls for weekly cycles composed of three days of dry air (less than 10 % relative humidity) and three days of water-saturated air (approximately 95 % relative humidity) pumped up through the sample, followed by a leach with water on Day 7. Option B protocol differs from Option A in that each cell is stored for six days under conditions of controlled and relatively constant temperature and humidity, and oxygen is supplied to the sample by diffusion (and possibly advection) of ambient air rather than by pumping. Although a test duration as short as 20 weeks may be suitable for some samples, more recent research indicates that a test duration well beyond 20 weeks may be required depending upon the objectives of the test (8,9).

5. Significance and Use

5.1 The laboratory weathering procedure will generate data that can be used to: (1) determine whether a solid material will produce an acidic, alkaline, or neutral effluent, (2) identify solutes in the effluent that represent dissolved weathering products formed during a specified period of time, (3) determine the mass of solute release, and (4) determine the rate at which solutes are released (from the solids into the effluent) under the closely controlled conditions of the test.

5.2 Data generated by the laboratory weathering procedure can be used to address the following objectives: (1) determine the variation of drainage quality as a function of compositional variations (for example, iron sulfide and calcium+magnesium carbonate contents) within individual mine-rock lithologies, (2) determine the amount of acid that can be neutralized by the sample while maintaining drainage pH ≥ 6.0 under the conditions of the test, (3) estimate mine-rock weathering rates to aid in predicting the environmental behavior of mine rock, and (4) determine mine-rock weathering rates to aid in experimental design of site-specific kinetic tests.

5.3 The laboratory-weathering procedure provides conditions conducive to oxidation of solid material constituents and enhances the transport of weathering reaction products contained in the resulting weekly effluent. This is accomplished by controlling the exposure of the solid material sample to such environmental parameters as reaction environment temperature and application rate of water and oxygen.

5.4 Because efficient removal of reaction products is vital to track mineral dissolution rates during the procedure, laboratory leach volumes are large per unit mass of rock to promote the

rinsing of weathering-reaction products from the mine-rock sample. A comparison of laboratory kinetic tests with field tests has shown that more reaction products from mineral dissolution are consistently released per unit weight and unit time in laboratory weathering tests (9). For example, sulfate release rates observed in laboratory tests of metal-mine rock have been reported to be 3 to 8 times those for small-scale field test piles of Duluth Complex rock (10), and from 2 to 20 times those for small-scale field test piles of Archean greenstone rock (11). A greater increase is anticipated when laboratory rates are compared with field rates measured from operational waste-rock piles.

5.5 Fundamental assumptions governing Options A and B of the procedure:

5.5.1 **Option A**—An excess amount of air pumped up through the sample during the dry- and wet-air portions of the weekly cycle reduces the potential for oxidation reaction rates being limited by low-oxygen concentrations. Weekly leaches with low ionic strength water promote the removal of leachable mineral dissolution products produced from the previous week's weathering cycle. The purpose of the three-day dry-air portion of the weekly cycle is to evaporate some of the water that remains in the pores of the sample after the weekly leach without totally drying out the sample. Consequently, sample saturation is reduced and air flow is enhanced. During the dry-air portion of the cycle, the oxygen diffusion rate through the sample may increase several orders of magnitude as compared to its diffusion rate under more saturated conditions of the leach. This increase in the diffusion rate under near-dryness conditions helps promote the oxidation of such constituents as iron sulfide. Additionally, evaporation from the three days of dry air increases pore water cation/anion concentrations and may also cause increased acidity (for example, by increasing the concentration of hydrogen ion generated from previously oxidized iron sulfide). Increased acid generation will enhance the dissolution of additional sample constituents. As evaporation continues, the remaining water may become over-saturated with respect to some mineral phases, consequently causing them to precipitate. Some precipitated minerals are potential sources of acidity when re-dissolved (for example, melanterite, $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$; and jarosite, $\text{K}_2\text{Fe}_6(\text{OH})_{12}(\text{SO}_4)_4$). Compared to the three days of dry air where the pore-water mass decreases over time, the wet (saturated)-air portion of the weekly cycle helps maintain a relatively constant mass of pore water in the sample (12). This may help promote some diffusion of weathering products (for example, re-dissolved precipitation products) in the remaining pore water without totally saturating the sample and adversely affecting oxygen diffusion.

NOTE 1—Under idealized conditions (that is, infinite dilution in air and water), published oxygen diffusion rates in air are five orders of magnitude greater than in water ($0.178 \text{ cm}^2 \text{ s}^{-1}$ versus $2.5 \times 10^{-5} \text{ cm}^2 \cdot \text{s}^{-1}$ at 0 and 25°C, respectively) (13).

5.5.2 **Option B**—In contrast to Option A, Option B protocol does not include dry air or wet air introduction to the humidity cells during the weekly cycle. Instead, Option B requires that temperature and relative humidity be maintained within a constant range by storing the cells in an environmentally

controlled enclosure during the 6 days following the weekly 500- or 1000-mL leach. Consequently, oxygen is delivered to the cells by diffusion (and possibly advection) of ambient air, rather than by pumping. Because it lacks a dry-air cycle, more interstitial water is retained in the Option B sample than in the Option A sample during the weekly cycle. Furthermore, the interstitial water content for Option B is more constant than that in Option A during the weekly dry-air cycle. In addition, the interstitial water content for Option B is less variable over the course of testing than that in Option A (14).

5.6 This test method has been conducted on metal-mine wastes to classify their tendencies to produce acidic, alkaline, or neutral effluent, and to measure the concentrations of selected inorganic components leached from the waste (2-3, 14-16).

NOTE 2—Interlaboratory testing of this method to date has been confined to mine waste rock. The method has not been tested for applicability to metallurgical-processing waste. Although the method has been applied by some practitioners to finely ground metallurgical-processing wastes such as mill tailings, those materials were not included in the interlaboratory testing of the method. Consequently, modifications of this method might be necessary to deal with problems associated with finely ground materials, which would make this method as written, inappropriate for kinetic testing of finely ground materials. For kinetic testing of finely ground materials, please refer to the biological acid production potential method in the appendix of Test Methods E1915 or other kinetic methods accepted by the regulatory jurisdiction.

5.7 The following are examples of parameters for which the scheduled weekly, semi-monthly, or monthly collected effluent may be analyzed (see 11.5.2 for suggested effluent collection frequency):

5.7.1 pH, Eh (oxidation/reduction potential), and conductivity (see Test Methods D1293, Practice D1498, and Test Methods D1125, respectively, for guidance);

5.7.2 Alkalinity/acidity values (see Test Methods D1067 for guidance);

5.7.3 Cation and anion concentrations;

5.7.4 Metals and trace metals concentrations.

5.8 An assumption used in this test method is that the pH of each of the leachates reflects the progressive interaction of the interstitial water with the acid-generating or acid-neutralizing capacity, or both, of the solid material under specified laboratory conditions.

5.9 This test method produces leachates that are amenable to the determination of both major and minor constituents. It is important that precautions be taken in sample collection, filtration, preservation, storage, and handling to prevent possible contamination of the samples or alteration of the concentrations of constituents through sorption or precipitation.

5.10 The leaching technique, rate of leach water addition, liquid-to-solid ratio, and apparatus size may not be suitable for all types of solid material.

5.11 Notable differences have been observed between Option A and Option B protocols:

5.11.1 Water retention in the solid-material sample between weekly leaches is more variable for Option A than in Option B; for Option A, standard deviations from the mean water

retention can range from 20 to 60 % of the mean value; comparable values for Option B have been reported at less than 9 % (14).

5.11.2 Greater water retention in Option B cells may favor dissolution of, and consequent acid neutralization by, magnesium-bearing minerals; increased retention may facilitate transport of acidic reaction products from iron-sulfide minerals to magnesium-bearing minerals (14).

5.11.3 Comparisons of sulfate mass release from the same sample subjected to Option A and Option B protocols indicate no significant difference in sulfate concentration as a result of water-retention variation between protocols (14). This suggests the increased water retention of Option B does not limit oxygen diffusion to the extent that sulfide mineral oxidation rates are reduced (14). However, samples containing greater than 7 % sulfur have not as yet been subjected to comparable Option A and Option B protocol studies.

NOTE 3—Examples of products from the test include the following: (1) effluent pH, acidity/alkalinity, and specific conductance; (2) cumulative mass release of individual solutes; and (3) release rates for individual solutes (for example, the average release of μg sulfate/g of solid material sample/week). The dissolution time required for depletion of estimated NP and the subsequent duration of acid generation can be estimated using the values generated in items (2) and (3) above (15).

6. Apparatus Options A and B:

6.1 *Humidity Cell*—A modified column constructed of materials suitable to the nature of the analyses to be performed (see Practices D3370 for guidance). Multiple humidity cells can be arranged in an array to accommodate the simultaneous laboratory weathering of different solid material types (Fig. 1). Two different sets of humidity cell dimensions are used to accommodate particle size differences present in the solid material:

6.1.1 Cells having suggested dimensions of 10.2-cm (4.0-in.) inside diameter (ID) by 20.3-cm (8.0-in.) height can be used to accommodate coarse solid material samples that have been either screened or crushed to 100 % passing 6.3 mm (0.25 in.).

6.1.2 Cells with suggested dimensions of 20.3-cm (8.0-in.) ID by 10.2-cm (4.0-in.) height can be used to accommodate solid material samples that pass a 150- μm (100-mesh) screen.

NOTE 4—Some coarse solid material samples may break down into finer-grained weathering products that could inhibit airflow and result in material being ejected from the cell during Option A's dry-air cycle. Consequently, use of the 20.3-cm ID cell rather than the 10.2-cm ID cell may be more appropriate (9). It should be noted that there are no published ruggedness testing results for this cell.

NOTE 5—For Option A, if samples are to be tested in the 20.3-cm ID cell, the air-entry port to the 20.3 cm ID cell needs to be moved from beneath the sample to just slightly above the sample so that air flow is directed across the sample surface rather than attempting to infiltrate the sample up through its bottom surface. The air-exit port is centered in the lid.

6.1.3 For cell wall thicknesses, 0.635-cm (0.25-in.) and 0.318-cm (0.125-in.) cm thickness have been used for Options A and B, respectively.

6.1.4 A perforated disk (constructed of materials suitable to the nature of analyses to be performed), approximately

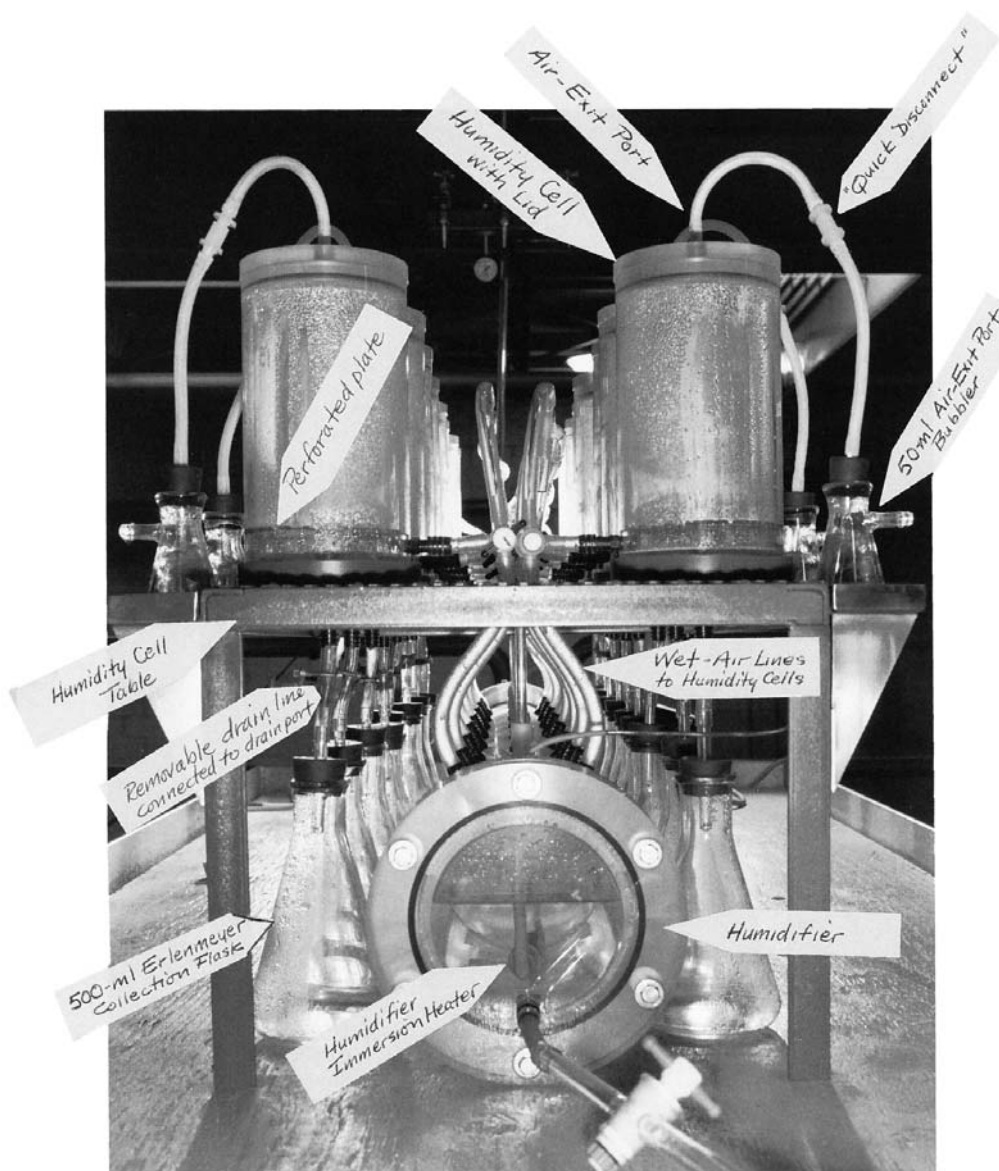


FIG. 1 Side View of 16-Cell Array (Option A)

0.315-cm (0.125-in.) thick, with an outside diameter (OD) suitable to the suggested vessel ID (6.1.1 and 6.1.2) is elevated approximately 1.25 cm (0.5 in.) above the cell bottom to support the solid material sample (see Fig. 1).

6.1.5 For Option A, the cell lid and base are 1.27 cm (0.5 in.) thick and machined so they each include a lip and plug; the plug portion fits into the ID of the humidity-cell top/bottom, and the lip fits over the rim of the cell opening. A hole is drilled in the center of the lid and base and tapped to accommodate a barbed NPT fitting for attachment to flexible tubing. The tubing from the lid leads to the air-exit port bubbler described in 6.19 and 6.20. The tubing from the base drains into a collection vessel.

NOTE 6—Lids for Option A can have an “O”-ring seal installed (machined into the plug surface) if air leakage makes it difficult to maintain constant airflow among individual cells. Both the “O”-ring seal

and the air-exit port bubbler (described in 6.20) have been helpful in maintaining airflow through individual cells of a multiple cell array during the dry- and wet-air portions of the weekly cycle. However, flow rates may still differ somewhat from cell to cell because of porosity differences between samples of differing particle-size distribution.

6.1.6 Lids for Option B do not require a barbed NPT fitting. The centered hole in the Option B lid is left open to allow for exchange of ambient air during the six-day portion of the weekly cycle. A hole is drilled in the center of the base and tapped to accommodate a barbed NPT fitting. Leachate from the cell drains directly through this fitting into a collection vessel.

NOTE 7—The cell and particle size dimensions described above are those used commonly for assessing the potential of waste-rock samples associated with metal-mining operations to produce acidic effluent. A “shoe box”-shaped cell design with similar dimensions is preferred by some researchers (6).

6.2 *Separatory-Funnel Rack*, capable of holding 500-mL or 1-L separatory funnels above the humidity cells.

6.3 *Filter Media*, such as a 12-oz/yd² polypropylene felt characterized by 22- μ m (0.009-in.) diameter filaments. The media should be able to transmit dry air at a rate of 20 to 30 cfm (see Test Methods **D276** and **D737** for guidance).

NOTE 8—Caution must be used in the selection of filter media materials since they may affect the effluent pH and chemistry adversely. Both pyrex wool and quartz wool retain as much as 10 to 15 g of water per g of wool (retained water tends to re-humidify the dry-air cycle to as much as 85 % relative humidity). Additionally, pyrex wool causes the neutral effluent pH to be raised by as much as 2 pH units due to leaching of the wool (**11**). In addition, pyrex (borosilicate) can contribute boron if this is a constituent of interest.

6.4 *Two Riffle Splitters*, with 0.63-cm (0.25-in.) and 2.5-cm (1.0-in.) wide riffles, respectively; the riffle splitter is a commonly used device for obtaining representative splits of dry, free-flowing granular materials.

6.5 *Laboratory Balance*, capable of weighing to 0.1 g.

6.6 *Analytical Balance*, capable of weighing to 1.0 mg.

6.7 *Screen*, 6.3 mm (0.25 in.).

6.8 *Screen*, 150 mm (100 mesh).

6.9 *Drying Oven*—Any thermostatically controlled drying oven capable of maintaining a steady temperature of $40 \pm 2^\circ\text{C}$.

6.10 *pH Meter*—Any pH meter with readability of 0.01 units and an accuracy of ± 0.05 units at 25°C ; two-channel operation (that is, pH and Eh) is desirable.

6.11 *Conductivity Meter*, capable of reading in micromhos (microseimens); calibrate at 25°C .

6.12 *Separatory Funnel*, 500 mL or 1 L, one per each humidity cell.

6.13 *Collection Vessel* (vessel such as an Erlenmeyer flask or Nalgene bottle), 500 mL or 1 L, one per each humidity cell.

6.14 *Volumetric Flask*, 500 mL or 1 L.

Option A:

6.15 *Digital Hygrometer/Thermometer*, with a relative humidity range of 5 to 95 %, and temperature range of -40 to 104°C (-40 to 220°F).

6.16 *Cylindrical Humidifier*, with suggested dimensions of 12.1-cm (4.75-in.) ID by 134.6-cm (53.0-in.) length. The following associated equipment are needed to provide saturated air for the three-day wet-air portion of the weekly cycle:

6.16.1 A thermostatically controlled heating element to maintain the water temperature at 25°C during the wet-air cycle.

6.16.2 An aeration stone (similar to aquarium-aeration equipment) or commercially available gas dispersion fritted cylinders or disks to bubble air into the humidifier water.

6.17 *Flow meter*, capable of delivering air to each humidity cell at a rate of approximately 1 to 10 L/min/cell.

6.18 *Oil/Water Trap*, 0.01- μ m, for inclusion in the feed-air line.

6.19 *Air-Exit Port Bubbler*—A 50-mL Erlenmeyer flask with a rubber stopper containing a vent and air-inlet tube (**Fig. 1**). The bubbler is connected to the air exit port in the humidity cell lid with flexible tubing. This helps maintain similar positive air pressure throughout all of the humidity cells.

6.20 *Flexible-Tubing Quick Disconnect*—A fitted, two-piece connection placed in the middle of the air-exit port flexible tubing so that the bubbler can be disconnected from the humidity cell to facilitate the measurement of air flow and relative humidity.

6.21 *Desiccant Column*, 5.1-cm (2-in.) ID by 50.8-cm (20-in.) length, plastic or glass cylinder capped on both ends (one cap should be removable for desiccant replacement), with an air inlet port on the bottom and an air exit port on the top.

6.22 *Dry Air Manifold*—A cylindrical manifold constructed from 2.25-in. ID schedule 40 acrylic plastic tubing, 28 in. long and fitted with 16 NPT barbed fittings. The airline exiting the desiccant column is routed directly to the cylinder, which then supplies dry air to each cell through an airline attached to its corresponding NPT barbed fitting. The cylindrical manifold fits atop the separatory-funnel rack.

Option B:

6.23 *Environmentally-Controlled Enclosure*—Any enclosure suitably sized to accommodate the number of samples being tested and associated equipment, and capable of maintaining consistent humidity (± 10 %) and temperature ($\pm 2^\circ\text{C}$).⁵

6.23.1 *Temperature Control*—Any commercially-available heater capable of maintaining consistent temperature within the enclosure.

6.23.2 *Humidity Control*—Any commercially-available humidifier and dehumidifier capable of maintaining consistent humidity within the enclosure.

6.23.3 *Instruments to Measure Temperature and Humidity*—Any commercially-available manual or digital hygrometer/thermometer (see **6.15**). Temperature should be readable to at least 1°C and relative humidity to 1 %.

6.23.4 *Fan*—Any commercially-available fan to provide air circulation within the enclosure.

7. Reagents

7.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.⁶

7.2 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean reagent water as defined by Type III at 18 to 27°C conforming to Specification **D1193**. The method by which the water is prepared, that is, distillation,

⁵ The tolerance ranges for humidity and temperature are the range of differences of maximum and minimum values from the mean of the respective data.

⁶ *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopeia and National Formulary*, U.S. Pharmacopeial Convention, Inc. (USPC), Rockville, MD.

ion exchange, reverse osmosis, electrodialysis, or a combination thereof, should remain constant throughout testing.

7.3 Purity of Air—The feed air line shall contain a 0.01- μ m oil/water trap in advance of the flow meter.

8. Sampling

8.1 Collect the samples to be tested using available sample methods developed for the specific industry (see Practices **D75** and **E877**, Guide **D420**, Terminology **D653**, and Test Methods **D2234/D2234M**).

8.2 The sampling methodology for materials of similar physical form shall be used where no specific methods are available.

8.3 The amount of material recommended to be sent to the laboratory should be sufficient to provide 8 to 10 kg of bulk sample for splitting, analysis, and testing (see **9.3**).

NOTE 9—Additional information on theory and methods for obtaining representative samples is contained in Pitard (**16**).

8.4 To prevent sample contamination or constituent loss prior to testing, store the samples in closed containers that are appropriate to the sample type and desired analyses (see Guide **D420** for guidance).

8.5 The time elapsed between sample collection and subsequent humidity cell testing should be minimized to reduce the amount of sample pre-oxidation (see Practices **D3370** for guidance). Report the length of time between sample collection and testing.

9. Sample Preparation

9.1 Air dry as-received bulk samples of solid material to prevent the additional oxidation of reactive minerals or compounds. If air-drying is not practicable, oven dry the solid material at a maximum temperature of 40°C for 24 h, or until a constant weight is reached.

NOTE 10—Oven drying at temperatures above 40°C may introduce chemical and physical changes in certain mineral species comprising the sample (**9**). These potential changes should be evaluated and accounted for in the analysis of the test data.

9.2 After reserving any coarse material needed for Method **E2242-02** (Meteoric Water Mobility Procedure) or other possible testing and analyses, screen the air-dried bulk samples through a 6.3-mm (0.25-in.) screen in accordance with Test Method **E276**. Crush any oversize material so that 100 % passes the screen. For particles finer than 15.2 cm (6 in.), the generation of excessive fines can be limited by stage crushing the oversize material in three steps: (1) large jaw crusher set at 1.92 cm, (2) small jaw crusher set at 0.95 cm, and (3) roll crusher set at 0.64 cm. After each of the first two crushing steps, the -0.64 cm fraction is collected and the oversize is passed to the next crushing phase.

9.2.1 Caution: Crushing a bulk sample so it passes a 6.3-mm (0.25-in.) screen may change the character of the sample by artificially increasing liberation and consequent surface areas of acid-producing and acid-consuming minerals contained in the + 6.3-mm (0.25-in.) material. A suggestion for avoiding this problem is to segregate the - 6.3-mm (0.25-in.)

fraction by screening rather than crushing, and to test that fraction according to the protocol and equipment described in this test method. The + 6.3-mm (0.25-in.) material can either be stage-crushed (as in **9.2**), or tested separately. For example, column testing could be conducted, although no standard protocol has been established for this testing. Samples from the drill core and cuttings also present material sizing problems, which must be considered when interpreting drill core and cuttings laboratory weathering data. The drill core must be crushed to - 6.3-mm (0.25-in.) to fit the cell described in this test method. The resulting size distribution from crushing will differ from that of run-of-mine due to differences in fracture patterns inherent to blasting practices that produce run-of-mine material. By contrast, drill cuttings size fractions are commonly less than 6.3-mm (0.25-in.) due to the rotary-percussive nature of obtaining the sample. The effects of particle size distribution changes resulting from the more finely crushed sample or from rotary-drill cuttings should be considered in the interpretation of data. In particular, particle size reduction will increase specific surface area of acid-generating and acid-neutralizing minerals and is likely to increase liberation of these minerals. Both of these effects will tend to increase the surface area of these minerals available for reaction. If this increase is biased towards either acid-generating or acid-neutralizing minerals, the balance of acid-generating and acid-neutralizing reactions will shift.

9.3 Mix and divide the bulk sample to obtain a representative test unit with a weight in the range of 8 to 10 kg, using a riffle splitter with 1-in. (2.54-cm) chutes (perform in accordance with Test Method **E877**, Sampling and Preparation Procedure-Riffing). Divide the test unit into eight nominal 1-kg test specimens. Store each test specimen in a resealable plastic bag (to prevent continued atmospheric oxidation of sulfide mineral-bearing samples, samples could be vacuum sealed or refrigerated).

NOTE 11—The dried sample should be mixed through the riffle splitter at least once before making any splits; recombine the splits resulting from the sample mixing exercise by pouring individual splits either over each other or through the splitter again. Once the actual split is made, it is wise to re-mix it (according to the above procedure) prior to making the next split. Mixing the sample through the riffle splitter may still result in segregation of the sample. If segregation persists, use of a rotary sample divider is advised.

9.4 Head-Sample Analysis—Select one 1-kg test specimen at random, and crush the dried test specimen so that at least 95 % passes a 1.7-mm (10-mesh) screen, in accordance with Test Method **E276**.

9.4.1 Divide the crushed test specimen in half twice, using a riffle splitter with 6.35-mm (0.25-in.) chutes (in accordance with Test Method **E877**, Sampling and Preparation Procedure-Riffing), and select a 250-g subsample at random for head sample analysis.

9.4.2 Transfer the selected 250-g subsample to a ring and puck grinding mill and grind to a nominal 95 % passing a 150- μ m (100-mesh) screen, in accordance with Test Method **E276**. Use the pulverized subsample to perform the following determinations: (1) total sulfur, sulfide, and carbonate analyses in accordance with Test Method **E1915**, (2) whole rock and

trace-element chemistry analyses, and (3) mineral characterization to identify and quantify the different mineral species comprising the sample.

NOTE 12—Because accurate estimation of a sample's capacity to neutralize acid (NP) requires identification of carbonate mineral speciation (that is, calcite, dolomite, ferroan dolomite, siderite, and so forth), and quantification of calcium and magnesium content in iron-bearing minerals (that is, ankerite, ferroan dolomite, and siderite, and so forth), these determinations are strongly recommended. It is also recommended that sample whole-rock chemistry and mineralogy be compared to ensure that chemistry is consistent with mineralogy and vice versa. Additionally, leach extraction testing of the pre-test sample, compared with leach extraction testing of post-test sample, may be beneficial in determining the extent of solutes released by mineral dissolution and subsequently sequestered in secondary solid phases during testing (17).

9.5 Screen-Fraction Analysis—Select one 1-kg test specimen at random, and determine the particle size distribution in accordance with Test Method E276. Sieve openings of 6, 10, 28, 35, 48, 100, 200, and 270 Tyler mesh are suggested.

9.6 The following analyses are recommended:

9.6.1 Determine the total sulfur, sulfide, and carbonate contents of individual size fractions in accordance with Test Method E1915. Whole rock or trace element chemical analyses, or both, may also be performed on these fractions.

9.6.2 Determine the extent of acid-generating (for example, iron sulfide, iron sulfate) and acid-neutralizing (for example, calcium carbonate, magnesium carbonate) mineral liberation of the individual size fractions.

NOTE 13—Paragraphs 9.6.1 and 9.6.2 are recommended as best practice to quantify the amount of sulfide and carbonate minerals present in each fraction and their degree of liberation within these fractions. The objective of the analyses described in 9.6.1 and 9.6.2 is to aid the user in correlating drainage quality with solid-phase composition by providing more detailed description of the exposed surface areas of acid-producing and acid-neutralizing minerals. These surface areas strongly affect the rates of acid production and neutralization. With regard to the applications of testing presented in 5.1 and 5.2, the analyses described will help: (1) identify whether the material being tested will produce acidic, alkaline, or neutral effluent; (2) determine the variation of drainage quality as a function of solid-phase composition; (3) measure the amount of estimated NP accessible in the solid; and (4) in general, aid in predicting the environmental behavior of the solid (see Refs 8, 18, and 19). To perform all of the determinations described in 9.6.1 and 9.6.2 a larger mass of sample material may be required than the stated 1 Kg (18).

9.7 Select one 1-kg test specimen at random for use in the laboratory weathering test method. Divide the test specimen into four nominal 250-g subsamples using the riffle splitter with 25.4-mm (1-in.) chutes, and label and store in resealable plastic bags until it is time to load the humidity cells.

NOTE 14—If the leach volume from the 1 kg sample mass does not provide sufficient effluent to meet analytical needs, a 2-kg test specimen could be used as long as the 0.5 : 1 or 1 : 1 leach-volume to sample-mass ratio is maintained. Split the sample between two cells. Record and then combine recovered volumes of the weekly effluent from both cells. Also record the combined volume.

9.8 Reserve the remaining test specimens for replicated testing or to resolve disputed results (recommend sample preservation by vacuum seal or refrigerated storage).

10. Apparatus Assembly

10.1 Option A—The humidity cells are table-mounted at a height sufficient to accommodate the placement of both the

humidifier and one collection flask for effluent collection from the bottom of each cell (Fig. 1). During the water-saturated and dry-air portions of each weekly cycle, feed air is metered to the bottom of each cell (or midway up the side in cells designed for minus 100 mesh material) at the selected rate (1 to 10 L/min). Feed air for the three-day dry-air portion is routed first through a desiccant column and then to each of the cells through a dry-air manifold (Fig. 2, Fig. 3). Feed air for the water-saturated air portion is routed through a water-filled humidifier by means of aeration stones or gas dispersion fritted cylinders/disks, and then to each humidity cell (Fig. 2). If necessary, a water-bubbling vessel can be attached to the air-exit port of each humidity cell lid to maintain constant airflow among the individual cells (Fig. 1).

10.2 Option B—The humidity cells are mounted on a rack of sufficient height to accommodate placement of vessels for collection of effluent from the bottom of each cell. The upper portion of the rack doubles as a separatory-funnel rack, and is of sufficient height to accommodate placement of the funnel spigot above the humidity-cell lid. A simple rack of wood construction is shown in Fig. 4. Note that holes are drilled in the humidity-cell shelf to accommodate the barbed fitting (drain) that is centered at the bottom of each cell. Unlike the Option A apparatus, no air plumbing is required. Unlike Option A, Option B cells are stored in an enclosure in which temperature and humidity are controlled during the 6 days following the leach. Shelves for cell storage and space for temperature- and humidity-control equipment are required in the enclosure.

10.3 Option A and B—A separatory funnel rack is mounted on the table that holds the cells if the weekly water leach is applied dropwise (drip leach). Multiple separatory funnels (one for each cell) are held in the rack during the drip leach that is performed on the seventh day of each weekly cycle (Fig. 2, Fig. 4). The separatory funnel can be used to meter the required water volume slowly down the sides of the cell wall until the sample is flooded if the weekly leach is to be a flooded leach.

11. Procedure Options A and B:

11.1 Cell Loading:

11.1.1 If more than one humidity cell is used at one time, label each with a sequential number, and use the same number for the matching collection vessel.

11.1.2 Weigh each humidity cell (without its lid) and each collection vessel; record the tare weights of each to the nearest 0.1 g.

11.1.3 Cut the filter media (such as 12-oz/yd² polypropylene described in 6.3) to the humidity cell's inside diameter dimensions so that it fits snugly yet lies flat on the perforated support.

11.1.4 Re-weigh the humidity cell, and record the resulting tare to the nearest 0.1 g; the original cell tare (11.1.2) minus the new cell tare is the weight of the filter media.

11.1.5 Transfer the contents from each of the four bags containing the 250-g samples (9.7) into the humidity cell (Fig. 5). Prior to the transfer, mix the contents of each bag by gentle rolling to eliminate possible stratification that may have occurred during sample storage.



FIG. 2 Front View of 16-Cell Array (Option A) with Separatory Funnel Rack

11.1.6 Re-weigh the loaded cell, and record the weight to the nearest 0.1 g; the loaded cell weight minus the combined cell and filter-media tare weight is the weight of the sample charge.

11.2 First Water Leach:

11.2.1 The leach application method for the first water leach (and all subsequent weekly leaches) is the flood leach.

NOTE 15—Both drip and flood-leach alternatives were provided in the original D5744-96 method. However, a subsequent interlaboratory study (20) that compared drip with flood-leach alternatives determined that there was little difference in results from the drip and flood-leach applications. Results from the two laboratories participating in the study showed that the drainage pH values for the end of rate periods were within 0.2 units of the mean, and sulfate release rates were consistently within 10 % of the mean. Consequently, because there was little difference between results from the two leach alternatives, and to simplify the method protocol, the flood-leach alternative is designated as the preferred water-leach application method. This does not preclude use of the drip-leach application if the flood-leach application becomes impracticable.

11.2.2 The first flooded leach, designated as the Week 0 leach, initiates the humidity cell test and establishes the starting or initial characteristics of the leachate. Because the laboratory-weathering test is made up of seven-day cycles, the sample is always leached on the same day of the week (for example, Monday). On the scheduled leaching day for Week 0, if removal of pre-leaching oxidation products is identified as a necessary component of the test objective, perform three

consecutive leaches (using either a 500-mL or 1-L volume per leach) (12, 14). Report the rationale for using the three consecutive leaches. Otherwise, use a single 500 mL or 1-L volume leach. Initial selection of either the 500-mL or 1-L volume of water is dependent upon the pore volume desired, quantity of solution required for analytical purposes, and the detection limits desired or available for analyses. However, after the Week 0 leach (that is, initial 500-mL or 1-L leaches), the selected weekly volume (500 mL or 1 L) may need to be changed because the volume originally selected is either determined to be insufficient to flush the reaction products from the sample, or rates of release may be too slow to produce detectable solutes of interest. Consequently, a weekly review of the drainage quality data from the selected weekly leach volume is recommended to ensure that the selected volume is adequate for the objectives of the test. Report any changes in the weekly leach volume and document the rationale for the change.

NOTE 16—Prior studies of humidity-cell tests on mining wastes showed that cation and anion loadings were commonly high in the leachate recovered from the Week 0 500-mL leach. These high loadings were due to the dissolution of pre-existing soluble oxidation salts present in the sample prior to sample collection. The first 3 to 5 weeks of weekly 500-mL leaches were required to flush these pre-existing salts from the samples being studied (15). The objective of performing three consecutive leaches during the Week 0 leach is to reduce the influence of pre-existing salts on succeeding weekly drainage quality, if this influence is identified

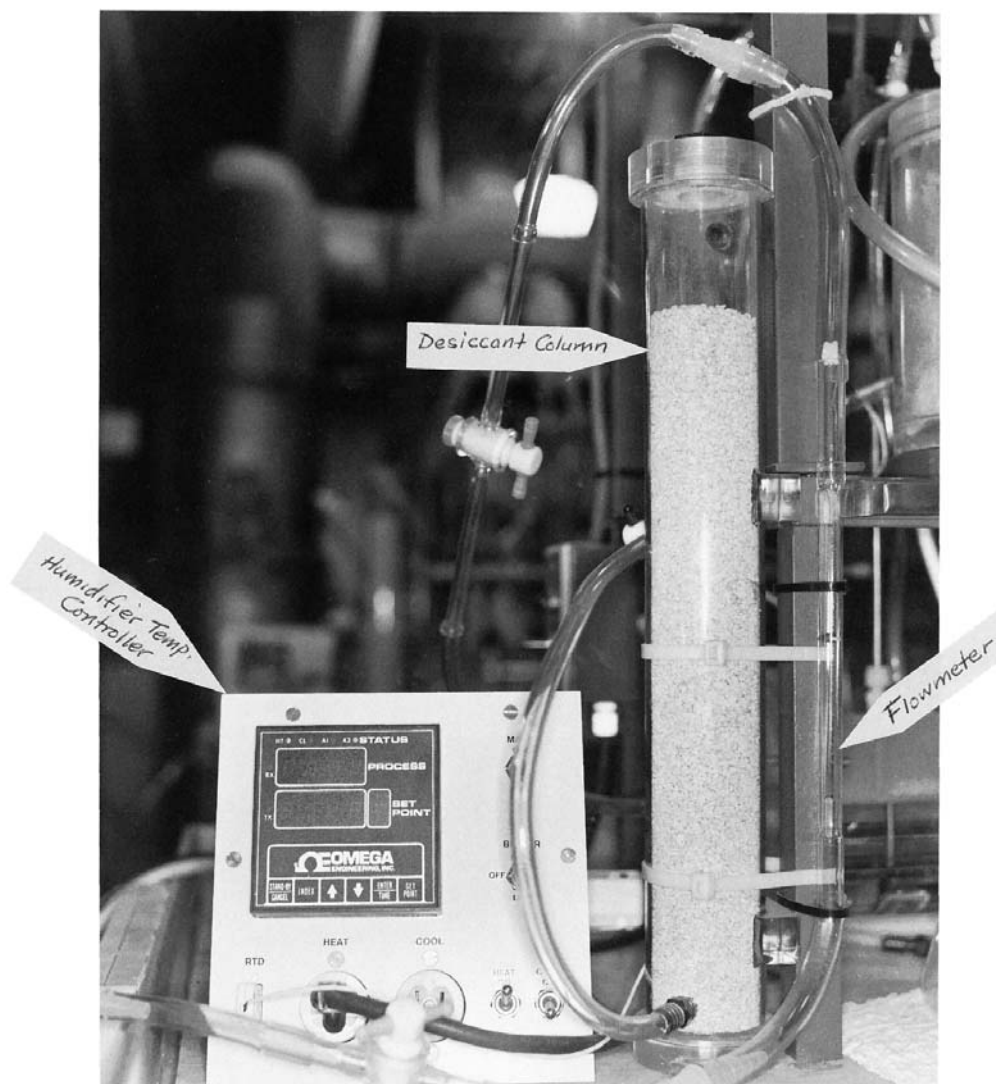


FIG. 3 Detail of Desiccant Column and Flow Meter

as a critical component of the test objective. It is possible that some pre-existing salts may continue to remain in the sample despite the three consecutive Week-0 leaches. Therefore, caution should be used in interpreting the rate of mass release observed during the first 3 to 5 weeks of the test.

NOTE 17—If objectives of the test require more effluent volume for chemical analyses than is provided by either the 500 or 1000 mL leach, run two cells of the same material as described in [Note 14](#) while maintaining the leach-volume to sample-mass ratio as 0.5 : 1 or 1 : 1.

NOTE 18—Assuming a sample density of 2.6 to 3.0 g/cm³ and a porosity of 40 to 45 %, a 500-mL leach represents approximately 1.5 to 2 pore volumes and a 1000-g sample would fill a 4-in. ID humidity cell to a height of approximately 2.5 to 3.5 in. above its perforated base.

11.2.3 Fill a separatory funnel for each cell with de-ionized water using a volumetric flask. Set each separatory funnel above its corresponding cell, place the collection vessel beneath its corresponding cell, and remove the cell lid. Plug the humidity cell air-entry and effluent-drainage ports with removable waterproof caps to prevent premature drainage of the flooded water leach (see [Fig. 4](#)). Using the separatory funnel, discharge the selected water volume slowly down the sides of

the cell wall until the sample is flooded. This application method reduces hydraulic agitation of the sample surface commonly caused by pouring liquid from an open-mouthed vessel. Alternatively, flooding may be accomplished by any application apparatus (for example, a peristaltic pump) that supplies the selected volume of leachant at a reasonable rate without causing agitation and suspension of the finer fractions contained in the sample charge.

11.2.4 Allow the flooded cell to sit for a period of at least 1 h before draining the leachate into the collection vessel by removing the drainage-port plug. The leach time commences after all of the leachant has been placed in the cell. The solid material sample should be saturated and covered with leachant to a depth sufficient to maintain sample saturation. In testing mining wastes, the observed depth of leachant cover from a 500-mL flooded leach performed in 10.2-cm (4.0-in.) ID cells is approximately 2.5 cm (1.0 in.).

NOTE 19—Duration of the flooded leach reported by researchers and



NOTE 1—Cells are placed in this configuration only during the leach portion of the weekly cycle. Upon completion of the leach and subsequent effluent collection, cells are covered and placed in a separate room where temperature and humidity are controlled. Note: The side ports visible on the humidity-cell bases are plugged air entry ports (these cells were originally constructed for use in Option A – the drainage ports are centered in the bottom of each cell and are fitted with barbed NPT fittings that project through corresponding holes drilled in the cell-support base board).

FIG. 4 End View of 16-Cell Array (Option B) with Separatory Funnel Rack

practitioners is variable. Morin and Hutt (9) recommend 2 h for – 6.3 mm samples (for example, waste rock) and at least 4 h for – 150 mm samples (for example, tailings). Lapakko and Antonson (18) reported pyrite oxidation rates based on sulfate mass release from weekly 10-min duration flooded leaches of 12 Archean greenstone samples. These oxidation rates were in good agreement with published rates, suggesting that sufficient oxidation-product leaching occurred within the 10-min leach residence time.

11.2.5 The following is performed once the leaching process has been completed: to reduce the effects of evaporation, and to minimize potential airborne contamination of each cell, place the lids on their corresponding cells and let the cells complete the leachate draining process for the remainder of the leaching day and overnight.

11.2.6 Disconnect the cells on the day following the leach, and weigh and record the weight of each cell and collection vessel. Set each filled collection vessel aside for leachate analyses (remember that three vessels per sample may be required to collect leachant if the test objective requires three consecutive leaches for the Week 0 leach). Measurements of effluent parameters and sample preservation procedures must be performed as soon as possible after leachate collection.

Return each cell, replace the filled collection vessels with clean, preweighed collection vessels, remove the air-entry port plug, hook up all connections (Option A), and begin the weekly cycle.

NOTE 20—Some samples become less permeable over time and require longer leachant collection times that extend 2 to 4 h into the second day of the weekly cycle. Consequently, 11.2.5 recommends that the leachant collection continue overnight and parameters be measured on day two of the cycle. However, to avoid introducing excessive variability in effluent parameter measurements such as pH and Eh, Minnesota Department of Natural Resources (John Folman, MN DNR, personal communication, October 17, 2006) uses a flow-through cell connected between the cell drainage port and the sample collection bottle. This enables MN DNR to measure pH and Eh from the draining leachate during the leaching day. Consequently, it is recommended that pH and Eh be measured by the end of the leach day (if an apparatus such as a flow-through cell is not used, volumes of leachant removed for these measurements need to be recorded and added to the tally of final leachant collection volume).

NOTE 21—It is recommended that sulfate, calcium, magnesium, sodium, and potassium concentrations in the weekly leachates from mine-rock samples containing iron-sulfide minerals be monitored according to a practical schedule. Their respective concentrations are critical measurements of mass release from (1) iron-sulfide mineral oxidation, (2)

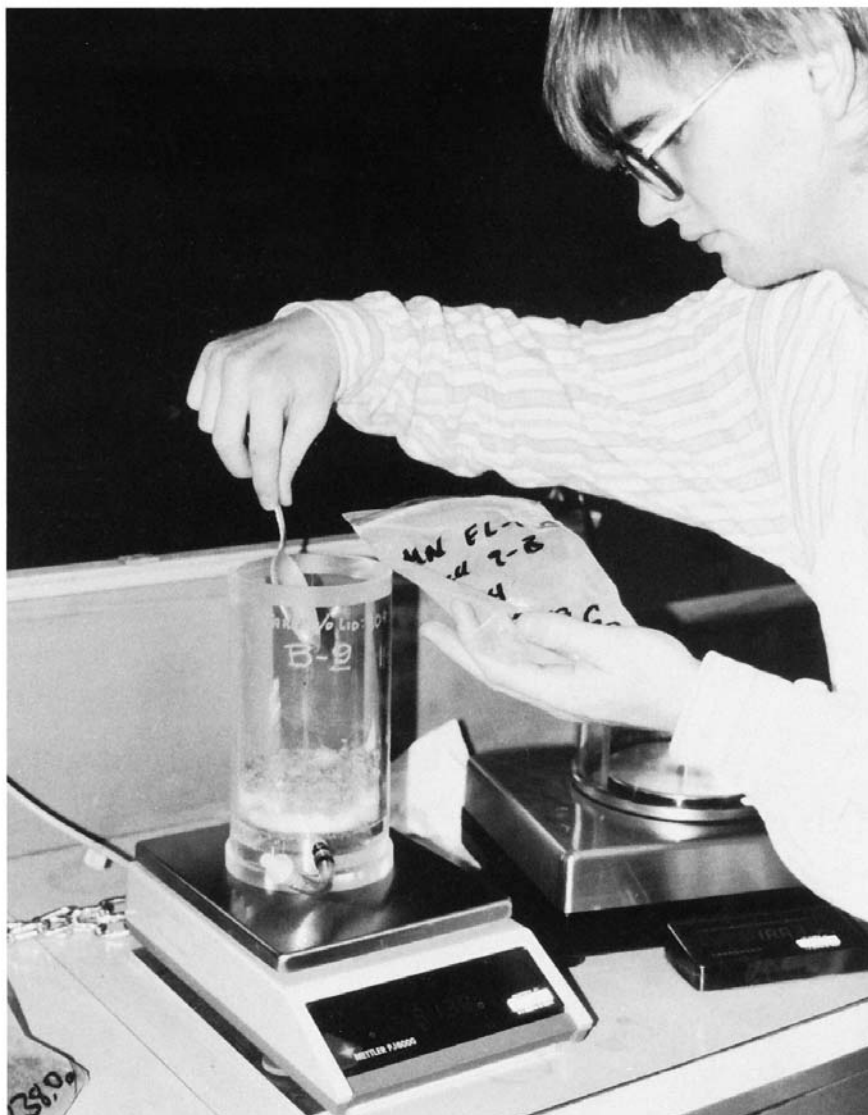


FIG. 5 Loading Humidity Cell with Filter Media and 1000-g Sample Charge

calcium- and magnesium-carbonate mineral dissolution, and (3) calcium, magnesium, sodium and potassium-silicate mineral dissolution. When leachate pH is ≤ 3.5 , iron concentrations are also of interest. Additionally, trace metals present in the leachate should be monitored, and their presence could be screened by analysis (for example, ICP-MS) to identify potentially problematic leachable chemical species. A proposed monitoring schedule for parameter measurements and chemical species analyses is suggested in 11.5.1. Calculation of charge balance from the analyses of each leachant sample is also recommended to assess the accuracy of drainage-quality analyses.

11.3 Subsequent Weekly Water Leaches:

11.3.1 A second flooded leach (either 500 mL or 1 L) is performed on day seven of the first weekly cycle. This leach marks the end of the first weekly cycle and is designated as the Week 1 leach.

11.3.2 Subsequent flooded leaches are designated as Week 2, Week 3 ... Week n , and they mark the end of the weekly cycle for that numbered week. Perform each weekly leach as described in 11.2.2 – 11.2.6.

11.4 Test Duration:

11.4.1 The criteria for ending the testing will depend on the objective of the test, which may be site specific.

11.4.2 If the objective is to determine the relative reactivity (for example, drainage pH, rates of sulfate release) as a function of compositional variations (for example, iron sulfide and calcium+magnesium carbonate contents) within individual mine-rock lithologies for the purpose of segregating mine wastes, then a specific test duration is not prescribed. The test

duration will depend on the composition of the solids and the intended application of the results. Drainage pH and rates of trace metal release are likely to vary with time, dependent on the solid composition. However, the following examples are presented as guidance to help determine a practical test duration for this objective:

11.4.2.1 If drainage pH is initially neutral, and calcium and magnesium carbonate minerals contents exceed a few tenths of one percent, their dissolution has potential to maintain drainage pH in the circumneutral range for tens of weeks despite presence of iron-sulfide minerals. For example, presence and dissolution of 1.4 weight percent calcium carbonate (calcite) maintained drainage pH from tailings, containing 6.6 weight percent pyrite, near 8 for 100 weeks. Drainage pH decreased below 6 after 122 weeks, at which time the calcite was depleted (21). Subsequent acid neutralization resulted from dissolution of silicate minerals. Drainage pH decreased below 4 after 136 weeks, below 3 after 313 weeks, and reached a minimum of roughly 2.3 after 320 weeks (MN DNR unpublished data). Consequently, if the minimum pH were needed to assess relative reactivity, test duration in excess of 320 weeks would be required. Further examples of determining the relative reactivity of sulfidic mine-waste lithologies in which silicate mineral dissolution accounts for the majority of acid neutralization are presented by Lapakko and Antonson (22).

11.4.2.2 If drainage pH is initially below 3.0 and test results are intended to: (1) identify mine wastes that produce highly acidic drainage; and (2) manage aforementioned mine wastes with such caution that applicable water quality standards are met, then the test should continue until consistent acidic drainage pH can be verified, if consistent pH parameters were defined in the test objectives. In this limited case the test could be of short duration. However, the following should be noted for this test objective: (1) quantification of “consistent pH” has not been technically established and would require definition as part of the test design with consideration of its objectives; (2) drainage pH and solute release rates might vary even after 60 weeks of reaction, and significant changes may take place even after several years (9); and (3) ultimate rates of solute release could deviate from those observed prior to test termination.

11.4.3 If the objective is to determine the amount of actually-available estimated NP present in the sample, then testing will need to continue until acidic effluent is produced or until the total calcium plus magnesium release indicates all calcium and magnesium carbonate minerals have been depleted (for example, low levels [1.9 to 4.2 % CaCO₃] of carbonate minerals in mine-rock samples subjected to humidity-cell testing caused a lag-to-acid breakthrough that ranged from 24 to 204 weeks - (11)).

11.5 Leachate Analyses:

11.5.1 After pH, Eh, and conductivity measurements have been made (either through use of a flow-through cell or from subsamples of the leachate), filter the remaining leachate using a 0.45 µm filter. Transfer any solids remaining on the filter back into the humidity cell.

11.5.2 Analyze the leachates for specific constituents or properties, or use them for biological testing procedures as desired, using (1) appropriate ASTM test methods or (2)

methods accepted for the site where disposal will occur. Where no appropriate ASTM test methods exist, other test methods may be used and recorded in the report, provided that they are sufficiently sensitive to assess potential water quality impacts at the proposed disposal site. The frequency of analyses must be consistent with test objectives, and interpretation and application of the results. The suggested minimum frequency for analysis of pH, alkalinity/acidity, and specific conductance is weekly through week 20, at least every two weeks through week 40, and at least every four weeks thereafter. Eh can also be determined as needed. It would be most rigorous to analyze concentrations of sulfate and other selected solutes weekly during the first 20 weeks. However, this may not be feasible. At a minimum, it is suggested that analyses be performed at weeks 0, 1, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20. For comprehensive chemical characterization of analytes not needed on a weekly basis to meet objectives of the test, the minimum recommended frequency is 0, 1, 2, 4, 8, 12, 16, and 20 weeks. As test duration increases beyond 20 weeks, these analyses can be conducted at least every four weeks through week 40, and at least every eight weeks thereafter. Whether visible phase separation during storage of the leachates occurs or not, appropriate mixing should be used to ensure the homogeneity of the leachates prior to their use in such analyses or testing.

NOTE 22—When analytical frequency decreases (for example, from every two weeks to every four to eight weeks), estimation is necessary, and consequently error is introduced. The degree of error (for example, from interpolation) is likely to be smaller during periods when solute concentrations are relatively stable. This potential for error must be considered when planning a change in analytical frequency and in subsequent data analysis, interpretation, and application. If calculation of mass release using interpolated concentrations is deemed inadequate based on the objectives of the test, effluent samples may be composited over periods determined to be appropriate (for example, a volume-weighted composite from 4 to 5 weeks of weekly effluent). Compositing of weekly effluent has the advantage of reducing frequency and cost of chemical analysis. Potential disadvantages of compositing weekly samples include (1) possible solute precipitation during the composite period, which would require sample digestion; and (2) masking of exceptionally high or low concentrations in several weekly effluent samples by mixing with moderate concentration samples from the remainder of the composite period.

11.5.3 Table 1 is an example of a spreadsheet format used for recording 20 weeks of leachate analytical data.

11.5.4 Fig. 6 is an example of a method used to plot the temporal variation (by week) of leachate pH, sulfate load, and cumulative sulfate load from 21 weeks of laboratory weathering (see 12.9 for the calculation of cumulative load and release rates).

11.6 Weathered Solid Material Analyses (recommended as best practice):

11.6.1 Weigh the humidity cell after collection of the final effluent and completion of a three-day dry-air period.

11.6.2 Transfer the weathered residue and filter media to a clean drying pan, and dry to constant weight at 40°C. Record the final weight.

11.6.3 Perform any gross sample examination (for example, sample texture and weathering-product mineral characterization) desired for the weathered residues prior to size reduction. To facilitate such an examination, empty the humidity cell

TABLE 1 Example Format for Recording 20 Weeks of Humidity Cell Leach Data

Cell 6,8C											
Week>>>	0	1	2	3	4	5	6	7	8	9	10
Concentration (μg/g) ^A											
*Cu	9.190	0.103	0.051	0.078	0.064	0.062	0.058	0.074	0.003	0.130	0.060
*Zn	8.30	0.42	0.22	0.62	0.20	0.12	0.13	0.11	0.10	0.19	0.34
SO ₄	4361	2568	1737	1763	1616	1635	1843	1424	1790	1540	1200
Liquid weight (g)	387.7	454.8	424.7	399.4	413.0	391.1	423.0	398.5	434.3	403.9	394.5
Loads (μg × 10 ⁻³) ^A											
*Cu	3.56	0.05	0.02	0.03	0.03	0.02	0.02	0.03	0.00	0.05	0.02
*Zn	3.22	0.19	0.09	0.25	0.08	0.05	0.05	0.04	0.04	0.08	0.13
SO ₄	1691	1168	738	704	667	639	780	567	777	622	473
Cum (μg × 10 ⁻³) ^A											
SO ₄	1690.8	2858.7	3596.4	4300.5	4967.9	5607.4	6387.1	6954.5	7731.9	8353.9	8827.3
Condition	4960	3900	2500	2290	2420	2530	2380	2300	2810	1987	1822
pH	3.160	5.020	4.730	4.5	5.030	4.560	4.76	3.97	4.37	4.28	4.32
Eh	586.9	613	582.2	597.3	521	553.3	504.7	555.8	610.7	590.3	549.3

Week>>> ^A	11	12	13	14	15	16	17	18	19	20
Concentration (μg/g) ^A										
*Cu	0.146	0.108	0.174	0.240	0.250	0.260	0.450	0.640	0.830	1.020
*Zn	0.31	0.13	0.20	0.28	0.32	0.37	0.48	0.59	0.70	0.81
SO ₄	1220	1239	1117.5	996	1040	1084	1175	1266	1357	1448
Liquid weight (g)	392.4	407.6	419.0	412.9	382.3	426.7	392.5	406.8	421.4	399.3
Loads (μg × 10 ⁻³) ^A										
*Cu	0.06	0.0	0.1	0.10	0.1	0.11	0.2	0.3	0.3	0.41
*Zn	0.12	0.1	0.1	0.11	0.1	0.16	0.2	0.2	0.3	0.32
SO ₄	478.5	505.0	468.2	411.2	397.6	462.5	461.2	515.0	571.8	578.2
Cum (μg × 10 ⁻³) ^A										
SO ₄	9306	9811	10 279	10 690	11 088	11 550	12 012	12 527	13 099	13 677
Condition	1872	1980	1823	1570	1905	2010	1636	2050	1751	2040
pH	3.84	4.05	4.23	3.81	3.47	4	3.4	3.37	3.21	3.02
Eh	552.2	551.3	570.1	561.6	556.1	579.8	567.5	565.2	583.1	578.2

^A μg × 10⁻³ is equivalent to mg. μg/g represents mass of solute per unit mass of recovered leachant sample; it is also equivalent to mg/L, assuming that the leachant sample is a dilute solution having a density of 1 g/mL.

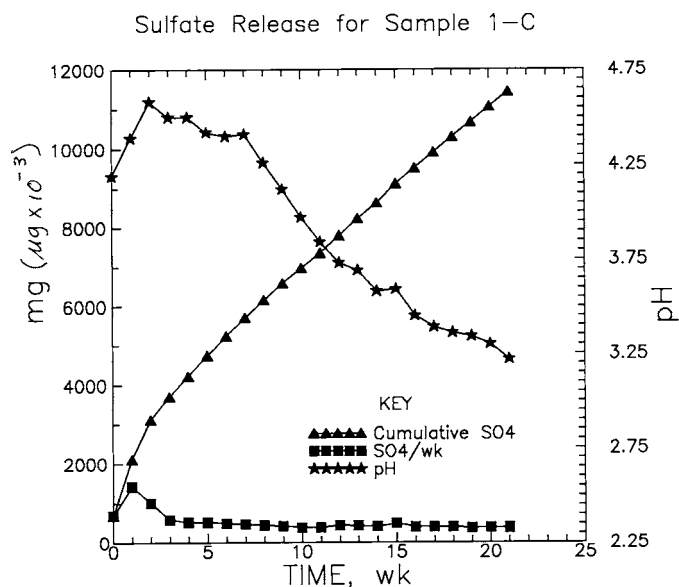


FIG. 6 Plot of Temporal Variation of pH, Sulfate Load, and Cumulative Sulfate Load from 21 Weeks

contents into a clean drying pan carefully by pushing gently on the bottom of the perforated plate with a wooden dowel until the sample exits the cell mouth. The perforated plate is accessed through the humidity cell drain port (see Fig. 1).

11.6.4 Identify and mark the top versus bottom portions of the sample for gross sampling purposes. Formations of ce-

mented lumps of sample termed “ferricrete” that result from the laboratory weathering process are common in iron-sulfide-mineral rich samples. Depending on the sample mineralogy, the degree of “ferricrete” cementation may vary vertically within the sample, and the investigator may wish to segregate the sample into upper, middle, and lower thirds to document and characterize such changes.

11.6.5 After drying to constant weight, screen the sample through a series of Tyler screens sufficient to produce both plus and minus 10-mesh (1.7 mm) fractions; roll-crush the plus 10-mesh fractions to pass a 10 mesh screen; recombine the resulting minus 10-mesh materials for splitting:

11.6.5.1 Split the sample into halves using a riffle splitter with 6.35-mm (0.25-in.) chutes (in accordance with Test Method E877, Sampling and Preparation Procedure-Riffling), and reserve one half to perform a sequential extraction leach; the objective of the sequential extraction is to identify and quantify metal concentrations contained in secondary mineral precipitates that remain in the laboratory-weathered sample after the final weekly leach. Report the resulting metal concentrations from each step of the extraction protocol. Examples of sequential extraction protocols are listed in Note 23.

11.6.5.2 Split the remaining half sample into two quarters using a riffle splitter with 6.35-mm (0.25-in.) chutes, and submit one quarter for mineral characterization; pulverize the other quarter in either a ring-and-puck or disk-pulverizing machine to 95 % passing a 150-μm (100-mesh) screen in accordance with Test Method E276.

11.6.6 Mix the pulverized residue in a blender or on a rolling cloth. Use the prepared residue for chemical characterization and for comparison with the pre-weathered solid material sample.

NOTE 23—In metal-mine waste studies, goals of post-leaching sample characterization include: (1) measuring the mass of iron-sulfide and carbonate minerals (that is, the calcium plus magnesium fraction) remaining in the sample and assessing the availability of these minerals for additional reaction; (2) identifying presence of secondary mineral formation (for example, gypsum, iron oxyhydroxide or “ferricrete”, and jarosite) and estimating its mass; and (3) determining occurrence of silicate dissolution in samples with high iron-sulfide mineral content. Carbon-sulfur contents of the remaining iron-sulfide and carbonate minerals are commonly measured by combustion-infrared spectrophotometer analyses of the pulverized sample (see 9.4.2). Traditional mineralogical techniques such as optical microscopy, X-ray diffraction (XRD), scanning electron microscopy (SEM) and electron-probe microanalysis (EPMA) (23, 24) may be required to speciate the carbonate mineral occurrence and to assess the availability of the iron sulfides and carbonates. Traditional mineralogical techniques also can be applied to identify mineral surface features indicative of mineral dissolution. The presence of secondary minerals can be assessed using traditional mineralogical techniques and leach extractions (8, 17). Leach extractions are particularly useful in determining the presence of metals released from primary minerals (for example, iron sulfides) and subsequently sequestered in secondary phases (for example, adsorbed onto iron oxyhydroxides) that will readily release these metals if the pH of pore water decreases. Some secondary mineral precipitates may accumulate despite efforts to remove most or all of the reaction products during the weekly leach. Sequential extractions can be used to determine the extent of this accumulation, and some examples of sequential extraction protocols are described in Leinz and others (25) and Ribet and others (26). However, solicitation of geochemical and mineralogical expertise is recommended to (1) identify the sequential extraction protocol most appropriate for the mine waste being tested, and (2) interpret the results generated.

Option A:

11.7 Temperature in the working area should be maintained at 25°C (±2°C). Minimum, maximum, mean, standard deviation, and number of temperature measurements are to be recorded. Occurrences of temperature values that fall outside the required range should be reported and differences in effluent quality during these excursions should be discussed.

11.8 Dry-Air Cycle:

11.8.1 The commencement of the three-day dry-air period marks the beginning of each new weekly cycle of the laboratory weathering humidity cell test; the first full-week cycle after the first leaching is designated Week 1; subsequent weeks (commencing with the second dry-air period) are designated as Week 2, Week 3 ... Week *n*, etc.

11.8.2 To perform the dry-air cycle, feed air is metered to the humidity cell array with a flow meter (see 6.17) set at a target rate in the range of 1 to 10 L/min per cell, depending on the objectives of the testing. During the first weeks of the test, the airflow rate should be checked daily and adjusted to the target value ±0.5 L/min. This daily check should continue until the cell airflow rate has stabilized within the target value range. Subsequent to this stabilization, airflow rate measurements can be performed on a less frequent but routine schedule during the dry-air cycle. As indicated in 5.5.1, the sample should not be dried completely.

11.8.3 Feed air from the flow meter is routed first through a desiccant column and then to each of the cells through a dry-air

manifold (Fig. 2). Air exiting the desiccant column should have a relative humidity of less than 10 % as measured with a hygrometer (see 6.15).

11.8.4 To maintain similar positive air pressure through the cells, it is recommended that a water-bubbling vessel be attached to each humidity cell air exit port coming out of the humidity cell lid; a 50-mL Erlenmeyer flask with a rubber stopper containing a vent and air inlet tube serves as a simple and efficient bubbler (Fig. 1).

11.8.5 The dry air is passed through each humidity cell for three days. Airflow rates from each of the cells should be checked routinely, recorded, and adjusted, if necessary. See 11.8.2 and Note 24.

11.8.6 Weigh cells at end of dry-air cycle and calculate the change in retained pore-water mass during the three-day dry-air cycle (see calculation described in 12.3).

11.9 Wet-Air Cycle:

11.9.1 The three-day wet-air period commences on the fourth day of each weekly cycle.

11.9.2 To perform the wet-air cycle of the method, feed air is routed through a water-filled humidifier via aeration stones or gas dispersion fritted cylinders/disks and then to each humidity cell (Fig. 2).

11.9.3 The water temperature in the humidifier is maintained at 25 ± 2°C to ensure that the sparged air maintains a relative humidity of approximately 95 % as measured with a hygrometer (see 6.15) from one of the humidifier exit lines (see Fig. 1). Recent intralaboratory testing showed that 99.9 % relative humidity was consistently achieved when water temperature in the humidifier was maintained within a range of 18.1 to 30.4°C (27). Airflow rates to each of the cells should be checked according to 11.8.2, recorded, and adjusted, if necessary.

11.9.4 Weigh cells at end of wet-air cycle and calculate the change in retained pore-water mass as in 11.8.6.

NOTE 24—Substantial fluctuations have been reported in the interstitial water mass remaining from the weekly leach after the 3-day dry air portion of Option A weekly cycles (14). Consequently, routine measurements of airflow rates, relative humidity, and pore-water mass are needed until airflow rates and post leach pore-water mass stabilize. After stabilization, these measurements can be performed on a less frequent but regular basis. Airflow and relative humidity measurements should be taken at the same time of day from the humidity cell air exit port; these measurements can be accomplished by installing a quick-disconnect fitting in the tubing that connects the air exit port to the bubbler (Fig. 1). Pore-water mass remaining after the dry and wet-air cycles is quantified by weighing the cell at the end of each cycle. The objective of these routine measurements is to prevent excessive drying or saturation of the sample. For example, sample pore water retained after the leach is reported to range from 70 to 150 mL, while pore-water loss after the three-day dry-air cycle is about 60 to 100 mL. Pore-water volumes typically change less than 3 mL during the wet-air cycle (12). If both Option A and B protocols are used to evaluate splits of the same sample, it would be useful to weigh Option B cells during the same portions of the weekly cycle as Option A for comparison of the data.

Option B:

11.10 *Store Cells in Environmentally-Controlled Enclosure*—On the first day following the weekly leach, remove the cells from the leach rack, weigh each and record the values (as in 11.2.6), return the covers to the respective cells, and then place the cells in the environmentally-controlled

enclosure for the remaining six days of the weekly cycle. Weigh each cell again on the seventh day, prior to the next leach (which marks the end of the weekly cycle) and record the pre-leach weight. Calculate the change in retained pore-water mass (27) during the six days of storage in the environmentally-controlled enclosure by subtracting the pre-leach weight (at the end of the weekly cycle) from the post-leach weight (at the beginning of the weekly cycle) and report the results (see 12.3).

NOTE 25—Intralaboratory testing was conducted with covers on the Option B cells for the remaining six days of the weekly cycle. The mass of pore water retained in the covered Option B cells was consistently greater than that of Option A after the same time period. Drainage-quality results from the covered Option B cells produced higher rates of calcium and magnesium release than did Option A cells. Because the mass of pore water retained in the covered Option B cells was consistently greater than Option A, it is conceivable that the higher water contents favored dissolution of calcium and magnesium minerals by facilitating transport of acidic reaction products from the surfaces of iron sulfides to calcium/magnesium carbonates (14). During a later study of the Option B protocol (MN DNR unpublished data), testing was conducted with the covers off for the remaining six days of the weekly cycle, and the amount of evaporation was relatively uniform over three consecutive weekly cycles (that is, 78, 81, and 86 %/week reduction in pore water).

11.10.1 Temperature in the enclosure should be maintained at 25°C (±2°C) (8, 27). For temperature readings, weekly averages should be calculated. The minimum, maximum, mean, standard deviation and number of weekly average temperatures should be reported. All temperature data should be recorded and archived.

11.10.2 Enclosure should be maintained at a constant humidity (60 %, ±10 %) (8, 27). For relative humidity readings, weekly averages should be calculated. The minimum, maximum, standard deviation and number of relative humidity measurements should be reported. All humidity data should be recorded and archived. Occurrences of temperature or humidity values that fall outside the required range should be reported as described in 11.7.

NOTE 26—For example, over the course of Option B testing reported in an interlaboratory study, temperature and relative humidity were measured three to four times weekly (20).

12. Calculation

12.1 Calculate the mass, in g, of the dry filter media:

$$M_f = M_{hf} - M_h \quad (1)$$

where:

M_f = mass of the filter media, g,
 M_{hf} = mass of the humidity cell and filter media, g, and
 M_h = mass of the humidity cell, g.

12.2 Calculate the mass, in g, of the dry solid material contained in the humidity cell:

$$M_{sd} = M_{hfsd} - M_{hf} \quad (2)$$

where:

M_{sd} = mass of the dry solid material, g,
 M_{hfsd} = mass of the humidity cell, filter, and solid material, g, and
 M_{hf} = mass of the humidity cell and filter media, g.

12.3 Calculate the mass, in g, of residual pore water contained in the solid material:

$$M_i = M_{hfsd} - M_{hfsd} \quad (3)$$

where:

M_i = mass of the residual interstitial leachant contained in the material, g,
 M_{hfsd} = mass of the humidity cell, filter, solid material, and pore water after leach, g, and
 M_{hfsd} = mass of the humidity cell, filter, and dry solid material, g.

12.4 Calculate the mass, in g, of the weekly collected effluent:

$$M_e = M_{ef} - M_{et} \quad (4)$$

where:

M_e = mass of the collected effluent, g,
 M_{ef} = mass of the collection flask and collected effluent, g, and
 M_{et} = mass of the collection flask, g.

12.5 Calculate the weekly loading, in µg, of the constituents of interest:

$$L_e = C_e \times M_e \quad (5)$$

where:

L_e = loading of the constituent of interest in the effluent, µg,
 C_e = concentration of the constituent in the effluent, µg/g, and
 M_e = mass of the weekly collected effluent, g.

12.5.1 If an analyte is not measured during a particular week, it may be estimated by linear interpolation between data points (see Note 22). However, flag all estimated values so they are not confused with experimental data.

12.5.2 Weekly effluent analyses may produce values that are below quantitation or detection limits for some analytes. Four alternatives for assigning values to these analytes could be considered: (1) if values reported as less than the limit are important to the study, a more sensitive analytical method should be sought; (2) values reported as less than the limit could be approximated as half the limit; (3) values reported as less than the limit can be approximated as the limit. (a conservative estimate of analyte release that may have an adverse impact on water quality); or (4) values reported less than the limit could be considered as zero for all subsequent calculations. Record the alternative selected with calculation documentation. Options 2 and 3 may overestimate mass loadings when concentrations are actually very close to zero, while options 2 and 4 could underestimate mass loadings. Consequently, participating parties (for example, operators and regulating jurisdictions) should agree upon a mutually-acceptable approach prior to testing.

12.6 Calculate the final residue loading, in µg, of the constituents of interest:

$$L_r = C_r \times M_r \quad (6)$$

where:

L_r = loading of constituent in the residue, μg ,
 C_r = concentration of the constituent in the residue, $\mu\text{g/g}$,
 and
 M_r = mass of the dried weathered residue and filter media, g.

12.7 Calculate the head concentration of the constituents of interest:

$$C_h = (L_{e0} + L_{e1} + L_{e2} \dots + L_{ef} + L_r) / M_{sd} \quad (7)$$

where:

L_{e0} = loading of the constituent for Week 0, μg ,
 L_{e1} = loading of the constituent for Week 1, μg ,
 L_{e2} = loading of the constituent for Week 2, μg ,
 L_{ef} = loading of the constituent for the final week, μg ,
 L_r = loading of the constituent in the residue, μg , and
 M_{sd} = mass of the dry solid material at the start of the test, g.

12.8 To check the material balance, calculate the difference between the initial chemical analyses of the unleached solids and the calculated head for the constituents of interest. Tabulate and report the results.

NOTE 27—Table 2 and Table 3 are examples of recording formats used to record weekly humidity cell and collection flask data.

12.9 Release rates for constituents of interest (diagnostic cations and anions) are calculated in two steps:

12.9.1 Weekly loads are determined by multiplying the constituent concentrations (determined from weekly leachate analyses) by the mass of recovered leachate; cumulative constituent loads are then determined by summing the respective weekly loads (for example, the cumulative load for Week 1 is the sum of loads for Week 0 and Week 1, and the cumulative load for Week 3 is the sum of loads for Weeks 0, 1, 2, and 3, etc.):

TABLE 2 Humidity Cell Data Sheet

Humidity Cell No. ____: Dry mass, g (to nearest 0.1 g)	
Empty humidity cell (M_e):	
Humidity cell + filter media (M_{hf}):	
Filter media (M_f):	
Humidity cell + filter + sample (M_{hfsd}):	
Sample charge (M_{sd}):	
Erlenmeyer collection flask (M_{ef}):	

Humidity Cell No. ____: Weekly Mass, g (to nearest 0.1 g)			
Humidity Cell + Filter + Sample at:			
Week No.	End, 3-Day Dry	End, 3-Day Wet	End, Leach (M_{hfsw})
Week 0	N/A	N/A	X
Week 1	X	X	X
Week 2	X	X	X
Week ...	X	X	X
Week 20	X	X	X

TABLE 3 Collection Flask Data Sheet

Collection Flask No. ^A ____: Weekly Mass, g (to nearest 0.1 g)			
Week No.	Flask + Effluent (M_{ef})	Flask Tare (M_{et})	Effluent (M_e)
Week 0	X	X	X
Week 1	X	X	X
Week 2	X	X	X
Week ...	X	X	X
Week 20	X	X	X

Collection Flask No. ^A ____: Weekly Effluent Parameters				
Week No.	Conductivity, μmhos	Eh, mV	pH	CaCO ₃ equivalent, parts per thousand
Week 0				Acidity Alkalinity
Week 1				
Week 2				
Week ...				
Week 20				

^A The flask number corresponds with the humidity cell number.

$$L_n = \sum_{i=0}^n (C_i \times M_i) \quad (8)$$

where:

L_n = cumulative loading of the constituent for n weeks, μg ,
 n = total number of weeks,
 i = i^{th} week,
 C_i = effluent concentration for the i^{th} week, $\mu\text{g/g}$, and
 M_i = effluent mass for the i^{th} week, g.

12.9.2 Cumulative loads are plotted versus the number of weeks comprising the test, and inflection points on the cumulative plot are identified (see Fig. 6). The slope of the cumulative load plot between each inflection point is calculated and represents the release rate as $\mu\text{g week}^{-1}$ for the weeks between and including the inflection points. Fig. 6 shows that the first inflection point on the cumulative sulfate plot occurs at Week 2. Note that the release rates for Weeks 0 to 2 and Weeks 2 to 21 can be calculated using (Eq 9); the results are summarized in Table 4:

$$R_n = \frac{(L_{n2} - L_{n1})}{(n_2 - n_1)} \quad (9)$$

TABLE 4 Calculated Release Rate for Weeks 0 to 2 and 2 to 21 from Cumulative Sulfate Plot, Fig. 6

n Weeks	$L_{n2}, \mu\text{g} \times 10^{-3}$	$L_{n1}, \mu\text{g} \times 10^{-3}$	n_2	n_1	$R_n, \mu\text{g/week}$
0 to 2	3122.4	688.7	2	0	1216.9
2 to 21	11 432.6	3122.4	21	2	437.4

where:

- R_n = release rate of the constituent for n weeks between and including the inflection points, $\mu\text{g week}^{-1}$,
- L_{n2} = constituent cumulative load, the final week of n weeks between and including the inflection points, μg ,
- L_{n1} = constituent cumulative load, the initial week of n weeks between and including the inflection points, μg ,
- n_2 = final week of n weeks between and including the inflection points, and
- n_1 = initial week of n weeks between and including the inflection points.

12.9.3 An alternative to calculating rates of release as in 12.9.2, is to perform linear regression on the data bracketed between each inflection point delineated by creating the cumulative load plot.

12.9.4 Rates of release can also be calculated by averaging weekly release rates. Weekly solute mass release can be calculated as the product of the observed concentration and the volume of drainage. The weekly release rate is calculated as this mass divided by a time of one week, in the desired units. Rates of solute release can then be determined by averaging the weekly rates for selected periods. The standard deviation can also be calculated to describe variability of rates over these periods.

13. Precision and Bias⁷

13.1 *Precision*—The precision of these test methods is based on an interlaboratory study (ILS) of Test Method D5744. Two of the three participating laboratories conducted their respective ILS testing from 1996 through 2002. Data from the third laboratory was generated from 1992 through 1995 and included with the other two laboratory's data to produce a three-laboratory ILS. Because Test Method D5744 protocol requires lengthy test durations (20 to 265 weeks in the present ILS) only three laboratories were available to participate in the ILS. Samples from six different rock types (lithologies) were subjected to two primary test conditions, which consisted of a drip and flood-leach alternative. Each leach alternative was performed under both Option A and Option B protocols. Drip versus flood-leach alternatives and Option A versus Option B protocol results were also compared and reported. Paragraphs 13.1.1 – 13.1.6 summarize the ILS tests and test comparisons. Although multiple lithologies and laboratories are listed under the “Repeatability” category, each lithology's repeatability was determined separately by a single laboratory. Similarly, under “Reproducibility,” each lithology's reproducibility was individually determined by participating multiple laboratories.

13.1.1 *Option A Repeatability*—Average deviation within the single laboratories from their mean of duplicate results and percent relative average deviation values were determined under two test conditions (1) drip-leach alternative (two lithologies, three laboratories) and (2) flood-leach alternative (one lithology, two laboratories).

13.1.2 *Option B Repeatability*—Average deviation within the single laboratories from their mean of duplicate results and percent relative average deviation values were determined for the drip-leach alternative (four lithologies, one laboratory).

13.1.3 *Option A Reproducibility*—Average deviation between the multiple laboratories from their polled mean results and percent relative average deviation values were determined under two test conditions (1) drip-leach alternative (one lithology, three laboratories) and (2) flood-leach alternative (one lithology, two laboratories).

13.1.4 *Option A Intralaboratory Comparison of Alternatives*—Average deviation and percent relative average deviation were determined for drip versus flood-leach alternatives (one lithology, two laboratories).

13.1.5 *Option B Intralaboratory Comparison of Alternatives*—Average deviation and percent relative average deviation values were determined for drip versus flood-leach alternatives (one lithology, one laboratory).

13.1.6 *Options A and B Intralaboratory Comparison*—Average deviation percent relative average deviation values were determined for Option A drip versus Option B drip-leach alternative (five lithologies, one laboratory).

13.1.7 Every “test result” represents an individual determination, and contributing laboratories reported duplicate or triplicate test results from their selected test conditions. Test Method D5744-96 was followed for the design and analysis of the data; the details are given in ASTM RR: D34–1019.

13.1.8 Because assessments of variability typically involved comparisons of drainage quality from duplicate or triplicate samples of selected waste-rock lithologies, two and occasionally three sets of data resulted. Consequently, a simple data analysis approach was adopted for each of the test conditions applied to specific lithologies. Drainage pH values were compared using the average deviation and percent relative average deviation from the mean. Mean pH was calculated by converting observed pH values from duplicate or triplicate cells to hydrogen ion concentrations, averaging these concentrations, and determining the negative logarithm of the average. Release rates of sulfate, calcium, and magnesium for duplicate or triplicate cells were also compared using the average deviation and percent relative average deviation from the mean. This data-analysis approach was applied separately to each analyte (pH, sulfate, calcium, and magnesium) under each of the test conditions (see Tables E5 through E11, Annex D, ASTM RR: D34-1019).

13.1.9 Because of the large volume of data produced by duplicate or triplicate humidity-cell testing of selected waste-rock lithologies under the two different test conditions combined with Option A and B protocols, sulfate release rates from the gabbro lithology were selected to illustrate the repeatability and reproducibility of Test Method D5744 protocol. The ILS-generated data for repeatability, reproducibility, and comparison of alternatives (expressed as average deviation and percent relative average deviation from the mean) for sulfate release rates from gabbro are summarized in Tables 5-7, Tables 8-10, and Tables 11-13, respectively. Repeatability, reproducibility, and comparison of alternatives for pH, calcium, and magnesium from the other five waste-rock

⁷ Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR:D34-1019. Contact ASTM Customer Service at service@astm.org.

TABLE 5 Repeatability of Sulfate in Duplicate Cells Under Repeatability in Single Laboratories: Option A 500-mL Drip-Leach Alternative

Material	% S	Lab	Week	Sulfate Release Rate ^A			Difference from Mean			Relative Average Deviation, % ^E
				Cell 1	Cell 2	Mean ^B	Δ Cell 1 ^C	Δ Cell 2 ^C	Average Deviation ^D	
Gabbro	0.56	1	20	207	168	188	19.5	-19.5	19.50	10.40
Gabbro	0.56	1	39	146	119	133	13.5	-13.5	13.50	10.19
Gabbro	0.56	1	59	102	95	99	3.5	-3.5	3.50	3.55
Gabbro	0.59	1	20	208	199	204	4.5	-4.5	4.50	2.21
Gabbro	0.59	1	59	124	134	129	-5.0	5.0	5.00	3.88
Gabbro	0.63	1	20	144	158	151	-7.0	7.0	7.00	4.64
Gabbro	0.63	1	39	99	98	99	0.5	-0.5	0.50	0.51
Gabbro	0.63	1	59	71	58	65	6.5	-6.5	6.50	10.08
Gabbro	0.68	1	20	203	192	198	5.5	-5.5	5.50	2.78
Gabbro	0.68	1	59	119	126	123	-3.5	3.5	3.50	2.86
Gabbro	0.71	1	10	284	367	326	-41.5	41.5	41.50	12.75
Gabbro	0.71	1	39	139	157	148	-9.0	9.0	9.00	6.08
Gabbro	0.71	1	59	154	165	160	-5.5	5.5	5.50	3.45
Gabbro	0.84	1	20	185	182	184	1.5	-1.5	1.50	0.82
Gabbro	0.84	1	39	89	95	92	-3.0	3.0	3.00	3.26
Gabbro	0.84	1	59	90	100	95	-5.0	5.0	5.00	5.26
Gabbro	0.99	1	10	366	395	381	-14.5	14.5	14.50	3.81
Gabbro	0.99	1	39	175	174	175	0.5	-0.5	0.50	0.29
Gabbro	0.99	1	59	198	210	204	-6.0	6.0	6.00	2.94
Gabbro	1.39	1	10	482	410	446	36.0	-36.0	36.00	8.07
Gabbro	1.39	1	59	234	251	243	-8.5	8.5	8.50	3.51
Gabbro	1.39	2	5	507	453	480	27.0	-27.0	27.00	5.63
Gabbro	1.39	2	20	250	253	252	-1.5	1.5	1.50	0.60

^Aμmol (kg rock · wk)⁻¹.

^BMean = (Cell 1 + Cell 2)/2

^CΔ Cell = difference of Cell 1 or Cell 2 from the mean.

^DAverage deviation = (|Δ Cell 1| + |Δ Cell 2|) / 2.

^EPercent relative average deviation = (Avg. Deviation/mean) × 100.

TABLE 6 Repeatability of Sulfate in Triplicate Cells Under Repeatability Condition in Single Laboratories: Option A 500-mL Drip-Leach Alternative

				Sulfate Release Rate ^A				Difference from Mean				Relative Average Deviation, % ^E
Material	% S	Lab	Week	Cell 1	Cell 2	Cell 3	Mean ^B	Δ Cell 1 ^C	Δ Cell 2 ^C	Δ Cell 3 ^C	Average Deviation ^D	
Gabbro	1.39	3	10	296	206	233	245	51.00	-39.00	-12.00	34.00	13.88
Gabbro	1.39	3	59	255	191	211	209	16.00	-18.00	2.00	12.00	5.74
Gabbro	1.39	3	100	155	143	179	159	-4.00	-16.00	20.00	13.33	8.39
Gabbro	1.39	3	145	109	128	142	126	-17.33	1.67	15.67	11.56	9.15
Gabbro	1.39	3	172	288	425	362	358	-70.33	66.67	3.67	46.89	13.09
Gabbro	1.39	3	265	499	505	500	501	-2.33	3.67	-1.33	2.44	0.49

^Aμmol (kg rock · wk)⁻¹.

^BMean = (Cell 1 + Cell 2 + Cell 3)/3

^CΔ Cell = difference of Cell 1, Cell 2, or Cell 3 from the mean.

^DAverage Deviation = (|Δ Cell 1| + |Δ Cell 2| + |Δ Cell 3|) / 3.

^EPercent Relative Avg. Deviation = (Avg. Deviation/mean) × 100.

lithologies are contained in Tables E5 through E11, Annex D, ASTM RR: D34-1019.

13.1.10 While percent relative average- deviation from the mean for each test category was generally within 10 %, occasional variation occurred beyond these limits. However, in no case was variation in pH or release rates of sulfate, calcium, and magnesium sufficient to misclassify sample acid-producing potential. Causes of elevated interlaboratory and intralaboratory variation include: (1) deviation based on temperature differences (that is, winter versus summer), (2) variation as test duration extended beyond three years, and (3) deviation in duplicated siltite-argillite samples from low sulfur largely as sulfate.

13.1.11 *Repeatability Limit (r)*—The task group determined use of average deviation from the single-laboratory mean was more appropriate than standard deviation. Consequently, *r* was not calculated in accordance with Practice E691.

13.1.11.1 Repeatability average deviation and percent relative average deviation for sulfate from gabbro rock samples are listed in Tables 5-7, respectively.

13.1.11.2 Average deviation and percent relative average deviation for comparisons of two leach alternatives and Option A versus Option B protocol for sulfate from gabbro rock samples are listed in Tables 11-13.

13.1.12 *Reproducibility Limit (R)*—The task group determined use of average deviation from the pooled mean of the

TABLE 7 Repeatability of Sulfate in Duplicate Cells Under Repeatability Condition in Single Laboratories: Option A 500-mL Flood-Leach Alternative

Material	% S	Lab	Week	Sulfate Release Rate ^A			Difference from Mean			Relative Average Deviation, % ^E
				Cell 1	Cell 2	Mean ^B	Δ Cell 1 ^C	Δ Cell 2 ^C	Average Deviation ^D	
Gabbro	1.39	3	10	273	235	254	19.0	-19.0	19.00	7.48
Gabbro	1.39	3	59	189	221	205	-16.0	16.0	16.00	7.80
Gabbro	1.39	3	100	173	181	177	-4.0	4.0	4.00	2.26
Gabbro	1.39	3	145	118	127	123	-4.5	4.5	4.50	3.67
Gabbro	1.39	3	172	416	340	378	38.0	38.0	38.00	10.05
Gabbro	1.39	3	212	731	701	716	15.0	-15.0	15.00	2.09
Gabbro	1.39	3	265	386	535	461	-74.5	74.5	74.50	16.18

^Aμmol (kg rock · wk)⁻¹.

^BMean = (Cell 1 + Cell 2)/2

^CΔ Cell = difference of Cell 1 or Cell 2 from the mean.

^DAvg. Deviation = (|Δ Cell 1| + |Δ Cell 2|) / 2.

^EPercent Relative Avg. Deviation = (Avg. Deviation/mean) × 100.

TABLE 8 Reproducibility of Sulfate in Triplicate Cells Under Reproducibility Condition in Single Laboratories: Option A 500-mL Drip-Leach Alternative

Material	% S	Lab	Week	Sulfate Release Rate ^A				Difference from Mean				Relative Average Deviation, % ^E
				Lab 1	Lab 3	Lab 2	Mean ^B	Δ Lab 1 ^C	Δ Lab 3 ^C	Δ Lab 2 ^C	Average Deviation ^D	
Gabbro	1.39	1, 2, 3	10	482	245	378.00	368	113.67	-123.33	9.67	82.22	22.32
Gabbro	1.39	1, 2, 3	59	234	209	214.00	219	15.00	-10.00	-5.00	10.00	4.57
Gabbro	1.39	1, 2, 3	100	184	159	172.00	172	12.33	-12.67	0.33	8.44	4.92
Gabbro	1.39	1, 2, 3	125	214	139	152.00	168	45.67	-29.33	-16.33	30.44	18.09

^Aμmol (kg rock · wk)⁻¹.

^BMean = (Lab 1 + Lab 2 + Lab 3)/3

^CΔ Lab = respective differences of Lab 1, Lab 3, or Lab 2 Cells from the mean.

^DAvg Deviation = (|Δ Lab 1| + |Δ Lab 2| + |Δ Lab 3|) / 3.

^EPercent Relative Avg. Deviation = (Avg. Deviation/mean) × 100.

TABLE 9 Reproducibility of Sulfate in Duplicate Cells Under Reproducibility Condition in Single Laboratories: Option A 500-mL Drip-Leach Alternative

Material	% S	Lab	Week	Sulfate Release Rate ^A			Difference from Mean			Relative Average Deviation, % ^E
				Lab 3	Lab 2	Mean ^B	Δ Lab 3 ^C	Δ Lab 2 ^C	Average Deviation ^D	
Gabbro	1.39	2, 3	145	142	116	129	13.00	-13.00	13.00	10.08
Gabbro	1.39	2, 3	172	358	151	255	103.50	-103.50	103.50	40.67
Gabbro	1.39	2, 3	212	521	120	321	200.50	-200.50	200.50	62.56

^Aμmol (kg rock · wk)⁻¹.

^BMean = (Lab 1 + Lab 2)/2

^CΔ Lab = respective differences of Lab 1 or Lab 2 Cells from the mean.

^DAvg. Deviation = (|Δ Lab 1| + |Δ Lab 2|) / 2.

^EPercent Relative Avg. Deviation = (Avg. Deviation/mean) × 100.

laboratories was more appropriate than standard deviation. Consequently Reproducibility limit (R) was not calculated in accordance with Practice E691.

13.1.12.1 Reproducibility average deviation and percent relative average deviation for sulfate from gabbro rock samples are listed in Tables 8-10, respectively.

13.2 *Bias*—At the time of the study, there was no accepted reference material suitable for determining the bias for this test method; therefore, no statement on bias is being made.

13.3 The precision statement was determined through statistical examination of humidity-cell-test results from 68

samples that comprised 6 different waste-rock lithologies. Testing was conducted under two test conditions, which were each conducted under Option A and B protocols by the participating laboratories.

13.4 To judge the equivalency of two test results, it is recommended to choose the material most similar in characteristics to the test material.

14. Keywords

14.1 chemical weathering; humidity cell; laboratory weathering; mill tailings; ore; oxidation; solid material; waste rock

TABLE 10 Reproducibility of Sulfate in Duplicate Cells Under Repeatability Condition in Single Laboratories: Option A 500-mL Flood-Leach Alternative

Material	% S	Lab	Week	Sulfate Release Rate ^A			Difference from Mean			Relative Average Deviation, % ^E
				Lab 3	Lab 2	Mean ^B	Δ Lab 3 ^C	Δ Lab 2 ^C	Average Deviation ^D	
Gabbro	1.39	2, 3	0-10	254	406	330	-76.00	76.00	76.00	23.03
Gabbro	1.39	2, 3	10-59	205	241	223	-18.00	18.00	18.00	8.07
Gabbro	1.39	2, 3	59-100	177	199	188	-11.00	11.00	11.00	5.85
Gabbro	1.39	2, 3	100-145	122	167	145	-22.50	22.50	22.50	15.57
Gabbro	1.39	2, 3	145-172	378	157	268	110.50	-110.50	110.50	41.31
Gabbro	1.39	2, 3	172-212	716	156	436	280.00	-280.00	280.00	64.22

^Aμmol (kg rock · wk)⁻¹.

^BMean = (Lab 2 + Lab 3)/2

^CΔ Cell = difference of Lab 2 or Lab 3 from the mean.

^DAvg. Deviation = (|Δ Lab 2| + |Δ Lab 3|) / 2.

^EPercent Relative Avg. Deviation = (Avg. Deviation/mean) × 100.

TABLE 11 Repeatability of Sulfate in Duplicate Cells Under Repeatability Condition in Single Laboratories: Comparison of Option A 500-mL Drip Versus Flood-Leach Alternative

Material	% S	Lab	Week	Sulfate Release Rate ^A			Difference from Mean			Relative Average Deviation, % ^E
				Drip Cell	Flood Cell	Mean ^B	Δ Drip Cell ^C	Δ Flood Cell ^C	Average Deviation ^D	
Gabbro	1.39	3	10	245	254	250	-4.5	4.5	4.50	1.80
Gabbro	1.39	3	59	209	205	207	2.0	-2.0	2.00	0.97
Gabbro	1.39	3	100	159	177	168	-9.0	9.0	9.00	5.36
Gabbro	1.39	3	145	126	122	124	2.0	-2.0	2.00	1.61
Gabbro	1.39	3	172	358	378	368	-10.0	10.0	10.00	2.72
Gabbro	1.39	3	212	546	716	631	-85.0	85.0	85.00	13.47
Gabbro	1.39	3	265	412	460	436	-24.0	24.0	24.00	5.50
Gabbro	1.39	2	10	378	406	392	-14.0	14.0	14.00	3.57
Gabbro	1.39	2	59	214	241	228	-13.5	13.5	13.50	5.93
Gabbro	1.39	2	100	172	199	186	-13.5	13.5	13.50	7.28
Gabbro	1.39	2	145	139	167	153	-14.0	14.0	14.00	9.15
Gabbro	1.39	2	172	151	157	154	-3.0	3.0	3.00	1.95
Gabbro	1.39	2	212	120	156	138	-18.0	18.0	18.00	13.04

^Aμmol (kg rock · wk)⁻¹.

^BMean = (Drip Cell + Flood Cell)/2

^CΔ Cell = difference of Drip Cell or Flood Cell from the mean.

^DAvg. Deviation = (|Δ Drip Cell| + |Δ Flood Cell|) / 2.

^EPercent Relative Avg. Deviation = (Avg. Deviation/mean) × 100.

TABLE 12 Repeatability of Sulfate in Duplicate Cells Under Repeatability Condition in Single Laboratories: Comparison of Option B 500-mL Drip Versus Flood-Leach Alternative

Material	% S	Lab	Week	Sulfate Release Rate ^A			Difference from Mean			Relative Average Deviation, % ^E
				Drip Cell	Flood Cell	Mean ^B	Δ Drip Cell ^C	Δ Flood Cell ^C	Average Deviation ^D	
Gabbro	1.39	2	10	470	640	555	-85.0	85.0	85.00	15.32
Gabbro	1.39	2	59	300	350	325	-25.0	25.0	25.00	7.69
Gabbro	1.39	2	100	210	250	230	-20.0	20.0	20.00	8.70
Gabbro	1.39	2	145	180	180	180	0.0	0.0	0.00	0.00
Gabbro	1.39	2	172	180	180	180	0.0	0.0	0.00	0.00
Gabbro	1.39	2	212	198	196	197	1.0	-1.0	1.00	0.51
Gabbro	1.39	2	265	215	234	225	-9.5	9.5	9.50	4.23

^Aμmol (kg rock · wk)⁻¹.

^BMean = (Drip Cell + Flood Cell)/2

^CΔ Cell = difference of Drip Cell or Flood Cell from the mean.

^DAvg. Deviation = (|Δ Drip Cell| + |Δ Flood Cell|) / 2.

^EPercent Relative Avg. Deviation = (Avg. Deviation/mean) × 100.

TABLE 13 Repeatability of Sulfate in Duplicate Cells Under Repeatability Condition in Single Laboratories: Comparison of Option A Versus Option B 500-mL Drip-Leach Alternative

Material	% S	Lab	Week	Sulfate Release Rate ^A			Difference from Mean			Relative Average Deviation, % ^E
				Opt A Cell	Opt B Cell	Mean ^B	Δ Opt A ^C	Δ Opt B ^C	Average Deviation ^D	
Gabbro	1.30 % S _T	2	59	214	305	260	-45.50	45.50	45.50	17.53
	1.24 % S ⁻²									
Gabbro	1.30 % S _T	2	100	172	207	190	-17.50	17.50	17.50	9.23
	1.24 % S ⁻²									
Gabbro	1.30 % S _T	2	145	140	180	160	-20.00	20.00	20.00	12.50
	1.24 % S ⁻²									
Gabbro	1.30 % S _T	2	172	150	180	165	-15.00	15.00	15.00	9.09
	1.24 % S ⁻²									
Gabbro	1.30 % S _T	2	212	120	198	159	-39.00	39.00	39.00	24.53
	1.24 % S ⁻²									

^Aμmol (kg rock · wk)⁻¹.

^BMean = (Opt A Cell + Opt B Cell)/2

^CΔ Cell = difference of Opt A Cell or Opt B Cell from the mean.

^DAvg. Deviation = (|Δ Opt A Cell| + |Δ Opt B Cell|) / 2.

^EPercent Relative Avg. Deviation = (Avg. Deviation/mean) × 100.

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METHOD SUMMARY

Modified (1991) Neutralization Potential

BBYOSOP-00020

JULY 2020

Reference Method:

1. Marchant, P. B. and Lawrence, R.W. 1991. Acid Rock Drainage Prediction Manual. A Manual of Chemical Evaluation Procedures for the Prediction of Acid Generation from Mine Wastes. CANMET Contract Number 23440-9-9149/01-SQ SSC. Energy, Mines and Resources Canada. MEND Project 1.16.1b. Electronic Revision June 2008.

Introduction

This Standard Operating Procedure (SOP) outlines the procedures for determining the Neutralization Potential (NP) in solid samples using the procedure described in Marchant and Lawrence (1991).

Scientific Principle

Neutralization potential is a static prediction test which compares the balance between the acid generating components (e.g., sulphide minerals such as pyrite) and the acid consuming components (mainly carbonate minerals) of soil, rock and tailings samples; this is also known as acid base accounting (ABA).

A fizz test is employed to provide a guide to the amount of acid to be initially added to the test.

In this modified method, the neutralization potential (NP) is determined by treating a sample of known weight with excess hydrochloric acid at ambient temperatures for approximately 24 hours. Acid is added as required during the acid treatment stage to maintain sufficient acidity for reaction. After treatment, the unconsumed acid is titrated with base to pH 8.3 to allow calculation of the calcium carbonate equivalent of the acid consumed. This value can then be compared with, or balanced against, the theoretical amount of acid that could be produced from the same weight of sample if all the contained sulphur determined by analysis was converted to sulphuric acid by oxidation.

The fundamental principles of acid base accounting compromise two distinct measurements:

1. Determination of the neutralization potential (NP) or acid consuming capacity of a sample; and
2. Calculation of the Acid Generation Potential (AGP) of the sample.

The difference between these two values is called the net neutralization potential (Net NP) and it is calculated by:

$$\text{Net NP} = \text{NP} - \text{AGP}$$

In order to interpret the results, a sample is classified by being potentially acid generating if its acid generation potential exceeds the acid neutralization capacity such that the NET NP is a negative number. However, this may not be confirmed in kinetic testing or actual field experience.

For the calculation of the acid generation potential, the sample is analysed for total sulphur and sulphate sulphur and sulphide sulphur is calculated by difference. AGP is determined from the calculated sulphide sulphur analysis, assuming (1) total conversion of sulphide to sulphate, and (2) production of 4 moles of H⁺ per mole of pyrite oxidized, in which a conversion factor of 31.25 is used to convert percent contained sulphur to kg CaCO₃ equivalent per tonne of material. In some cases, other sulphur species such as that associated with the mineral barite (not distinguished in a typical sulphate analysis) which does not contribute to the acid generation potential might be determined and correction made to the sulphide sulphur calculation. It is recommended to use sulphide sulphur values rather than total sulphur values for this calculation as the presence of sulphate, which does not contribute to acid formation, can result in erroneously high results.

This method differs from the Standard Sobek Neutralization Potential in the following ways:

Test Step	Standard Sobek NP	Modified NP
Reaction Time	2 hours	24 hours
Sample Boiling and Agitation	The sample flasks are boiled after the addition of acid and only occasionally swirled.	The sample flasks are agitated during the reaction time and there is no boiling.
Sample Heating	The sample flasks are heated to >300°C.	No heating.
Titration Endpoint	pH 7.0.	pH 8.3.
Timing of Titration	The samples are titrated on the same day.	The samples are titrated on the following day.

Scope

This analysis is applicable to the measurement of the modified neutralization potential in solid samples such as soil, rock, and tailings.

Detection Limits

RDL is not applicable.

Interferences

There are no interferences listed in the reference method.

Sample Handling & Preservation

There are no specific sample storage conditions, sample containers, or holding times required for this test method. Typically, samples are stored at room temperature. Samples are not preserved.

In some cases, for example, with highly reactive samples or upon request by the customer, it may be necessary to purge the sample containers with nitrogen gas after removing splits and/or store the samples in a cold room.

Sample splits are typically stored in "Whirlpak" type bags. The sample splits are stored with minimal air space (i.e., squeeze out as much air out of the bag as possible once sample split(s) have been removed from the bag).

Modified (1991) Neutralization Potential



Typically, a minimum of 20 g of sample is needed to conduct this test.

Sample Matrix	Sample Container	Minimum Volume	Holding Time	Storage Conditions	Preservation
Solid samples (such as soil, rock, tailings)	None specified	≥ 20 g*	None	None specified Typically, ambient room temperature	None specified



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METHOD SUMMARY

**Preparation of Solid Samples for Sulfate-Sulfur Analysis
Using HCl or HCl/HNO₃**

BBY0SOP-00009

Reference Method:

1. ASTM, 2012. Method D 2492-02 Standard Test Method for Forms of Sulfur in Coal. Sections 6.3.1 and 7.3.1 only.

Introduction

This Standard Operating Procedure (SOP) outlines the procedures for preparing solid samples such as soil, rock, and tailings for sulphate sulphur and sulphur speciation using the extraction procedures described in ASTM D2492-02 (2012).

Results from this method are used to aid in the estimation of present and potential future acid rock drainage behavior for a particular locations

Scientific Principle

Chemical analysis can estimate the content of acid-producing minerals in mine waste samples. A significant acid-producing component are sulphur species that include iron sulphide minerals and metal sulphate minerals. Sulphide containing minerals are of particular interest, because they can directly contribute to the acid generation capability of a given sample. An analytical scheme to quantify acid-soluble sulphate in mining wastes is useful in estimating their potential for acid production. The difference between total sulphur content and acid leached sulphate value is used to determine sulphide content of the sample.

Sulphate-sulphur is extracted from the analysis sample with dilute hydrochloric acid. The sulphate sulphur is determined by colourimetry (BBY6SOP-00017).

Most sulphate-containing minerals are soluble in HCl but pyritic and organic sulphur species are not.

The residue from the HCl extraction is subsequently extracted using nitric acid. This HNO₃ extract is boiled to dryness and dissolved into HCl to arrive at an extract with the same matrix as the HCl extract (approximately 5% HCl). Decolourizing using hydroxylamine hydrochloride is performed if required. Pyritic sulphur is calculated as a stoichiometric combination with iron. Organic sulphur is determined by difference.

The minerals barite (BaSO₄), anglesite (PbSO₄), and celestite (SrSO₄) are very insoluble in HCl. Therefore sulphate content in materials containing significant quantities of some of these minerals will be underestimated.

Scope

This method is applicable to the measurement of sulphate sulphur, sulphide sulphur, and non-extractable sulphur speciation in solid samples, such as soil, rock, and tailings.

Detection Limits

Information on the reporting detection limit and range can be found in analytical method - Determination of Sulfate by Konelab.

Interferences

The principle interferences leading to high results include the following: Suspended matter, Silica, BaCl₂ precipitant, NO₃⁻, SO₃²⁻ and occluded mother liquor in the precipitate. Suspended matter may be present in the sample and the precipitating solution. Soluble silicates may be rendered insoluble, and SO₃²⁻ may be oxidized to SO₄²⁻ during the analysis. Ba(NO₃)₂, BaCl₂, and water are occluded to some extent with BaSO₄.

Alkali metal sulfates can lead to low results, especially alkali hydrogen sulfate species. This can result in the substitution of barium with another lower weight element in BaSO₄. Heavy metals, such as Cr, and Fe, cause low results by interfering with the precipitation of SO₄²⁻ and by forming heavy metal sulfates. An acid medium is necessary to prevent precipitation of barium carbonate and phosphate; however, it is important to limit acid concentration to minimize the solution effect.

Alternate methods can be used to determine sulfur species depending on rock mineralogy. Barite, jarosite and alunite mineralogy may not totally dissolve in the digestion and have been noted to underestimate sulfate content.

Sample Handling & Preservation

All samples must be identified and traceable from receipt through analysis, data delivery and final disposal.

There are no specific sample storage conditions, sample containers, or holding times required for this test method. Typically, samples are stored at room temperature. Samples are not preserved.

In some cases, for example, with highly reactive samples or upon request by the customer, it may be necessary to purge the sample containers with nitrogen gas after removing splits and/or store the samples in a cold room.

Sample splits are typically stored in "Whirlpak" type bags. The sample splits are stored with minimal air space (i.e., squeeze out as much air out of the bag as possible once sample split(s) have been removed from the bag).

Typically, a minimum of 20 g is required to conduct this test.

Sample Matrix	Sample Container	Minimum Volume	Holding Time	Storage Conditions	Preservation
Solid samples (such as soil, rock, tailings)	None specified	≥20 g*	None	None specified Typically, ambient room temperature	None specified