Table 4.9: Expected method precision (as RPDs) based on Interlaboratory Study Results

Analyte	14-week RPD	Initial Flush RPD	Weathering Test RPD (Difference between 14-week and initial flush RPD)
Fe	90.4	50.9	**39.5**
Mn	52.5	44.1	**8.4**
Al	72.5	38.6	**33.9**
Ca	21.9	38.8	**(16.9)**
Mg	21.4	16.4	**5.0**
Se	42.9	26.2	**16.7**
Zn	60.2	52.0	**8.2**
Na	25.1	21.1	**4.0**
K	23.7	21.5	**2.2**
SO_4	27.5	20.4	**7.1**
Alkalinity	28.7	35.2	**(6.5)**
Acidity	99.9	27.0	**72.0**
Conductivity	13.2	11.1	**2.1**
	Mean absolute difference		
pH	0.2	0.2	**0**

RSD results included in Table 4.10 reflect the pooled results of the interlaboratory study, using datasets from seven laboratories evaluating the effects of weathering on samples of Brush Creek shale, Kanawha Black Flint shale, Lower Kittanning shale, Houchin Creek shale, and Middle Kittanning sandstone.

Table 4.10: Overall pooled RSDs based on Analyte

Analyte	14-week	Initial Flush	Weathering Test RSD (Difference between 14-week and initial flush RSD)
Fe	114	109.4	**4.6**
Mn	78.0	65.4	**12.6**
Al	86.0	78.8	**7.2**
Ca	34.1	41.6	**(7.5)**
Mg	33.5	52.7	**(19.2)**
Se	48.8	47.4	**1.4**
Zn	85.0	97.6	**(12.6)**
Na	40.5	49.3	**(8.8)**
K	36.5	46.6	**(10.1)**
SO_4	37.2	43.4	**(6.2)**
Conductivity	39.6	26.0	**13.6**
	Standard Deviation		
pH	0.7	0.6	**0.1**

Based on results of the study, several general patterns also are apparent as to the effectiveness of the draft weathering procedures in producing valid and verifiable results for prediction of mine drainage water quality.

- The variability between duplicate samples during the initial flush period can provide an indication of variability that will occur during weathering. The lower the variability (as RPD) during the initial flush, the more likely the samples being evaluated are indeed duplicates. All precautions should be taken during sample construction, to ensure duplicate samples are identical as possible (e.g., identical column construction; identical sample weight and particle-size distribution, and the addition and collection of identical volumes of water).