GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

Office of the Governor

DIANNE R. NIELSON
Energy Advisor

DERR-2010-018105

September 28, 2010

Kelly Payne, P.G.
Principal Advisor, Closure & Remediation
Kennecott Utah Copper Corporation
P.O. Box 6001
Magna, UT 84044-6001

RE: Kennecott Utah Copper Corporation's (Kennecott) letter entitled *Annual Report on Zone A Plant Operations and Acid Plume Extraction Under NRD Consent Decree*, dated July 30, 2010.

Dear Mr. Payne:

As the State Trustee for Natural Resource Damages (Trustee), I have received and reviewed the above referenced annual report which covers the operational period between June 1, 2009 and May 31, 2010. The Division of Environmental Response & Remediation (DERR) has also completed a review of this report. Kennecott has satisfactorily reported on the operational history of the Zone A reverse osmosis treatment plant and acid water extractions for the fourth year of operations. A few comments are enclosed for discussion as part of the next NRD Project Oversight Committee meeting.

If you have any questions, please do not hesitate to call Douglas Bacon (801-536-4282).

Best regards,

Dianne R. Nielson

Dianne R. Nielson, Ph.D.
Trustee for Natural Resource Damages

Enclosure (1)

cc: Amanda Smith, Executive Director – Department of Environmental Quality (electronic)
Brent Everett, Director – Division of Environmental Response & Remediation (electronic)
Sandra Allen, Utah Attorney General Rep. – Division of Environmental Response & Remediation (electronic)
Douglas Bacon, Division of Environmental Response & Remediation (electronic)
Mark Attencio, Jordan Valley Water Conservancy District (electronic)

Comments on the July 30, 2010 Annual Report of Zone A Plant Operations and Acid Plume Extraction Under the NRD Consent Decree

The following comments are provided to initiate a discussion during the next NRD Project Oversight Committee (POC) meeting.

1. Table 1 Zone A Plant Operation Metrics, page 2: DERR observed that for the annual totals of the product water, the difference between the Kennecott and JVWCD meters was 23 acre-feet (the JVWCD meter showing a greater volume). DERR would recommend a discussion (during the next POC meeting) about the precision and accuracy of these two meters. It would be helpful to understand how the precision and accuracy of these two meters differs to better understand (or place into context) the variability in volume readings documented this operating year.

2. Section – Quality of Delivered Water, 2nd paragraph, page 3: In reference to Table 3, Kennecott states that on two occasions the TDS laboratory measurement exceeded the 250 mg/L TDS concentration criteria (specified in the 2004 NRD Project Agreement), 06/18/2009 and 7/16/2009. Further noted, there was not a corresponding spike in the grab samples collected and analyzed for specific conductance (which is a function of TDS) during this same time period. Kennecott states these two grab samples are not indicative of Zone A product water quality, but are attributable to the "inherent variability" in measuring TDS in very clean water.

   Compliance with the TDS criterion is a performance metric under the 2004 Project Agreement between the JVWCD and Kennecott. The performance metric under the 2004 NRD Three Project Agreement is compliance with the drinking water permit (under which the product water from the plant has to comply with the State of Utah primary and secondary drinking water standards). For purposes of better understanding Kennecott's conclusion about "inherent variability", please provide a discussion during the next POC meeting on the actual causes of the variability seen in measuring TDS in the product water.

3. As it pertains to the two proposed improvement projects discussed on pages 4 & 5, please keep DERR involved in the planning and implementing process. As it pertains to the proposed addition of a new feed well to the RO plant, please provide an understanding about the location of the well and whether it will be in a position to extract the sulfate portion of the Zone A plume.

For information purposes, DERR performed a correlation and comparative analysis of the TDS and Specific Conductance data (please refer to the attached Excel spreadsheet with charts).

4. Based upon the Correlation of Determination ($R^2 = 0.23$), only 23% of the time can one accurately predict a TDS or Specific Conductance value from the other. DERR continues to advise Kennecott that these two values cannot be a surrogate measurement for the other.

5. A comparison of the average concentration and standard deviation values for the two data sets determined that TDS has a higher standard deviation value then Specific Conductance. Based upon the higher standard deviation, TDS concentrations appear to vary more around the TDS arithmetic mean.

6. After plotting the two data sets, the Specific Conductance data were observed to fluctuate less around the applicable arithmetic mean than the TDS data. Specific Conductance had a more linear trend line than the TDS data. The "inherent variability" as Kennecott discusses for the TDS data (and is noted above in Comment No. 2) is observable by the fluctuating trend line. Comment No. 5 & 6 both document support that the TDS data has some variance within the measurement. As noted in Comment No. 2, Kennecott should consider preparing a discussion (for the next POC meeting) on what is causing the variance in the TDS data set.

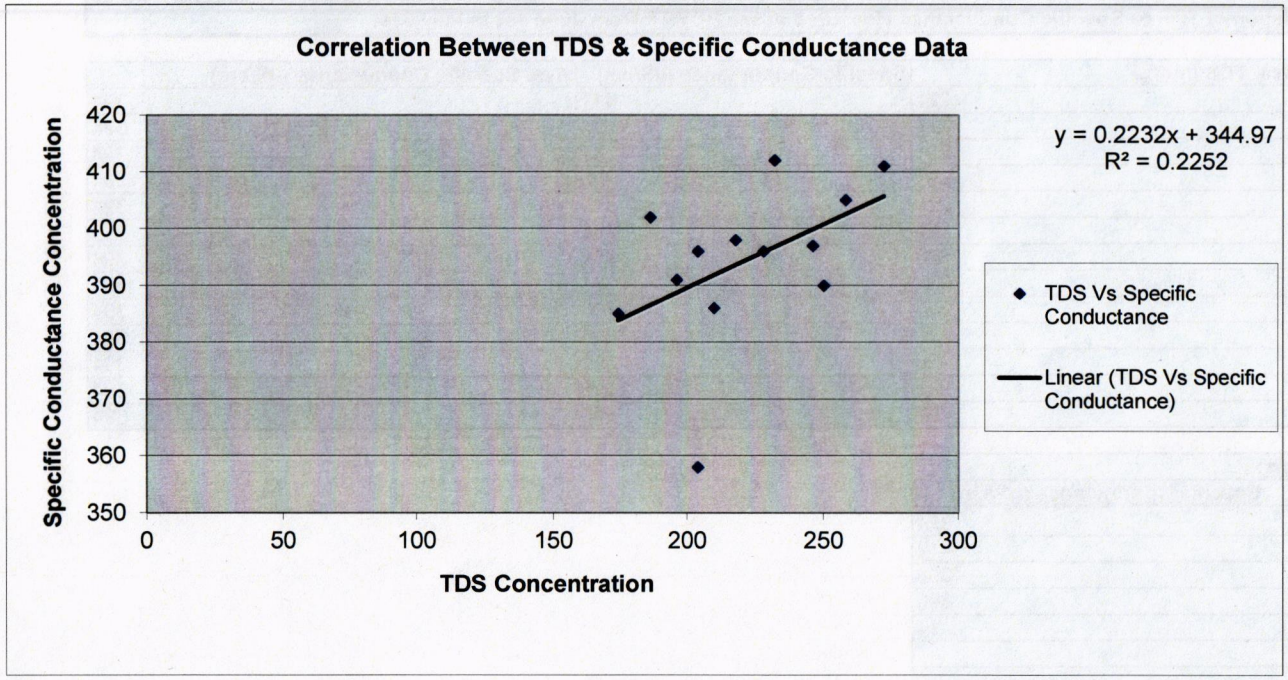
Comparison and Correlation of TDS to Specific Conductance Measured at the BCWTP from June 1st to May 31st

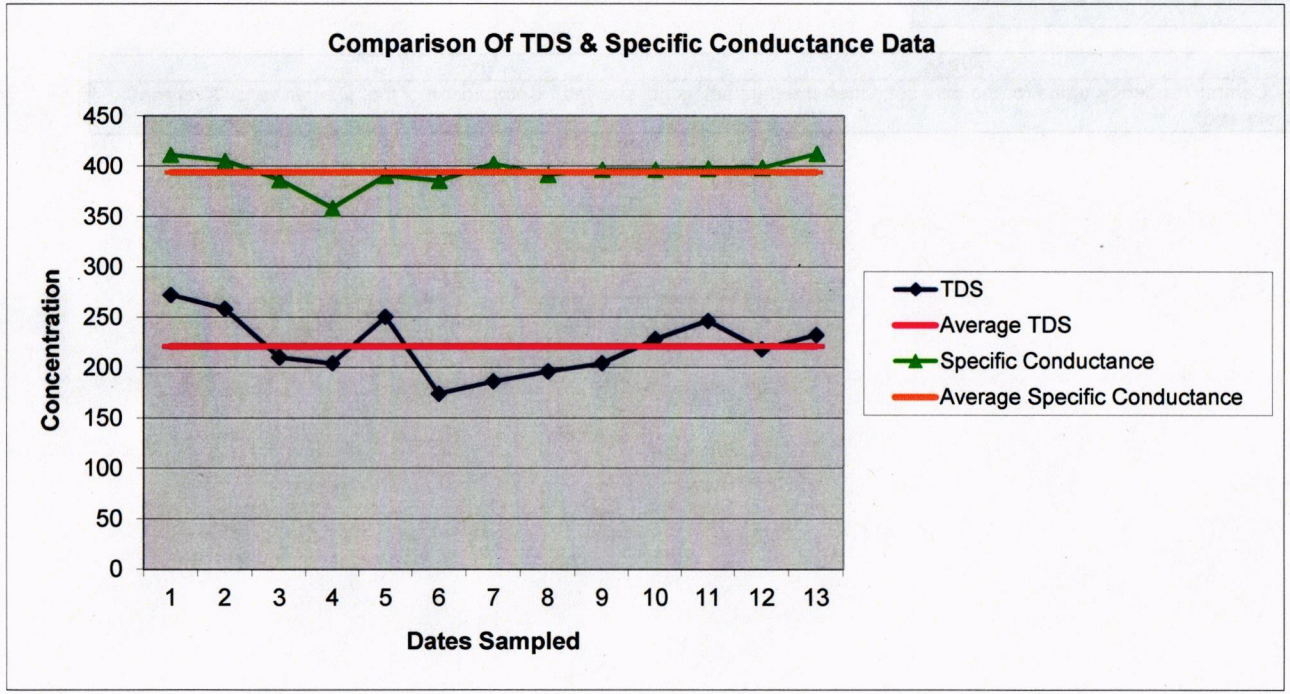
Sample Date	TDS (mg/L)	Ave. TDS (mg/L)	Specific Conductance (µS/cm)	Ave. Specific Conductance (µS/cm)
6/18/2009	272	221	411	394
7/16/2009	258	221	405	394
8/20/2009	210	221	386	394
9/17/2009	204	221	358	394
10/15/2009	250	221	390	394
11/19/2009	174	221	385	394
12/21/2009	186	221	402	394
1/20/2010	196	221	391	394
2/18/2010	204	221	396	394
3/18/2010	228	221	396	394
4/15/2010	246	221	397	394
4/28/2010	218	221	398	394
5/20/2010	232	221	412	394

Statistical Analysis:		
	TDS	Specific Conductance (µS/cm)
Average [1]	221	394
Maximum	272	412
Minimum	174	358
Median	218	396
Standard Deviation	29	14
Coefficient of Determination ($R^{2)}$	0.23	
Pearson Coefficient (R)	0.47	

Notes:

1 The "Average" or arithmetic mean is a measure of the Central Tendency Value for the data set, when the data set is not skewed. Comparison of the "Median" and "Average" values demonstrates that these two data sets are not skewed.


Correlation Between TDS & Specific Conductance Data
Specific Conductance Concentration
420
410
400
390
380
370
360
350
0
50
100
150
200
250
300
TDS Concentration
y = 0.2232x + 344.97
R² = 0.2252
TDS Vs Specific Conductance
Linear (TDS Vs Specific Conductance)


Comparison Of TDS & Specific Conductance Data
Concentration
450
400
350
300
250
200
150
100
50
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Dates Sampled
TDS
Average TDS
Specific Conductance
Average Specific Conductance