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Manager - Environment

26 July 2011

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Environmental Response &
Remediation

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DEPARTMENT OF
ENVIRONMENTAL QUALITY

Brad T. Johnson
State of Utah Trustee for Natural Resource Damage
Utah Department of Environmental Quality
195 North 1950 West
Salt Lake City, Utah 84116

DERR 2011-012720

SCANNED

**Subject: Annual Report on Zone A Plant Operations and Acid Plume Extraction
under NRD Consent Decree**

Dear Mr. Johnson:

Pursuant to Paragraph IX.C of the Agreement among the Trustee for Natural Resources for the State of Utah, Jordan Valley Water Conservancy District, and Kennecott Utah Copper Corporation, dated August 31, 2004 (Three-Party Agreement), Kennecott Utah Copper LLC (KUC) submits its fifth Annual Report on Zone A Plant Operations. KUC also operates the plant pursuant to the Project Agreement Between Kennecott Utah Copper Corporation and Jordan Valley Water Conservancy District (Project Agreement).

Additionally, KUC makes its annual reporting of water extracted from the core of the Zone A acid plume as required by Paragraph V.B of the August 1995 Consent Decree settling the State's Natural Resource Damage Claim against Kennecott Utah Copper Corporation (NRD Consent Decree).

The operating period for this report is June 1, 2010 to May 31, 2011.

Treatment Plant Operation

Table 1 reports monthly and annual operational metrics for the Zone A Plant during the reporting period. These data are discussed below.

Volume of Delivered Water

In the reporting period, KUC delivered 3,705 acre-feet to Jordan Valley Water Conservancy District (JVWCD; as measured by JVWCD at the Zone A Meter Station and reported to KUC.) Paragraph I.C.1 of the Three-Party Agreement requires the delivery of 3,500 acre-feet per year on a five-year rolling average. For the five year period ending May 31, 2011, the five-year rolling average is 3,562 acre-feet (Table 2 and Figure 1), in full compliance with the Three-Party Agreement.

Table 1 also presents total plant production (KUC meter), feed volumes, permeate production, and recovery statistics. The difference between the total plant production and the volume of water delivered reflects in-plant water use and inherent variability in metering flow. There are no specified performance criteria for these metrics and values are reported for information only.

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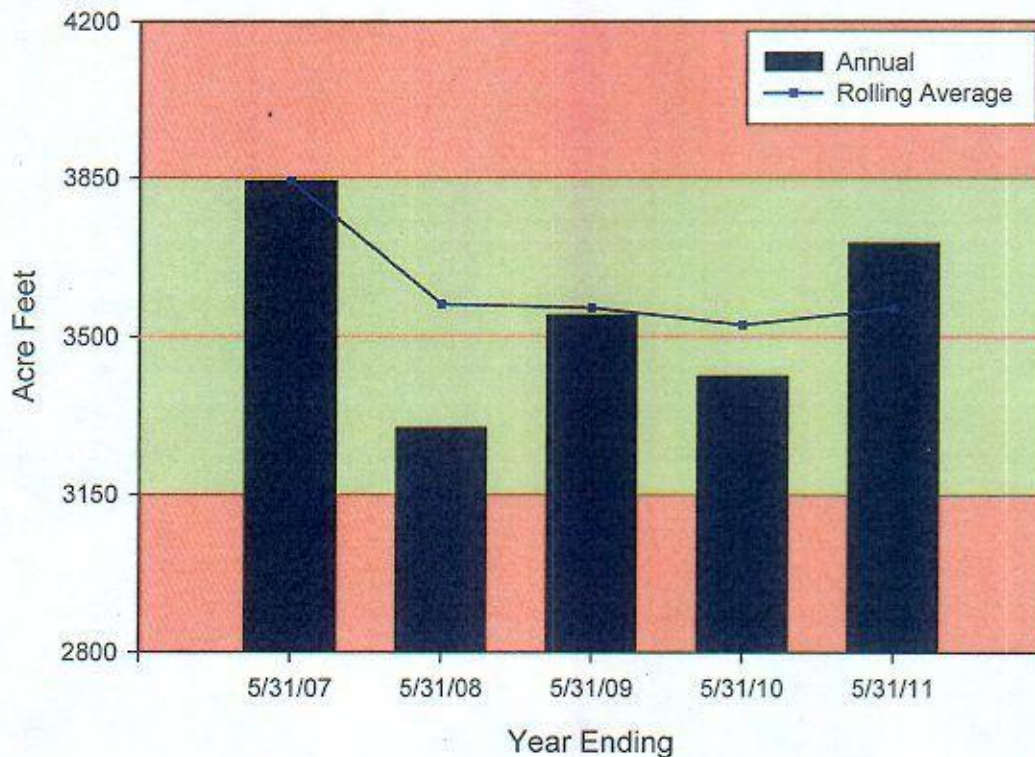
Table 1 Zone A Plant Operation Metrics

	Units	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Year
Drinking Water Production														
Delivered (JWWCD Meter)	acre-feet	352.7	357.8	336.9	316.5	282.7	228.6	323.2	228.1	294.3	330.5	322.5	331.3	3,705
Total Plant (KUCC Meter)	acre-feet	346.2	351.4	331.6	312.4	279.3	225.6	317.9	225.4	288.9	324.6	317.5	325.8	3,647
Feed Water														
Rack 3 Feed	acre-feet	205.5	208.0	199.0	185.8	142.4	187.1	192.2	112.9	173.9	195.8	190.2	195.4	2,188
Rack 4 Feed	acre-feet	205.5	208.0	198.9	190.4	196.6	92.1	192.4	146.4	173.9	195.8	189.9	195.5	2,185
Blend Water Feed	acre-feet	38.3	37.9	34.8	32.2	28.1	21.8	33.4	29.1	29.6	33.8	33.1	34.4	387
Total Feed Water	acre-feet	449.3	453.9	432.7	408.4	367.1	301.0	418.0	288.4	377.4	425.4	413.2	425.3	4,760
Permeate Production														
Rack 3 Permeate	acre-feet	155.8	158.2	150.0	139.4	106.9	136.6	145.2	85.7	131.1	147.4	143.2	147.3	1,647
Rack 4 Permeate	acre-feet	154.5	156.6	148.8	142.8	145.4	69.0	144.5	110.8	130.7	146.8	142.6	146.2	1,639
Total Permeate	acre-feet	310.3	314.8	298.8	282.2	252.3	205.6	289.7	196.5	261.8	294.2	285.8	293.5	3,286
Recovery														
Permeate	%	75.5%	75.7%	75.1%	75.0%	74.4%	73.6%	75.3%	75.8%	75.3%	75.1%	75.2%	75.1%	75.1%
Plant (KUCC Meter/Feed)	%	77.1%	77.4%	76.6%	76.5%	76.1%	74.9%	76.1%	78.2%	76.6%	76.3%	76.8%	76.6%	76.6%
Overall (JWWCD Meter/Feed)	%	78.5%	78.8%	77.8%	77.5%	77.0%	76.0%	77.3%	79.1%	78.0%	77.7%	78.1%	77.9%	77.8%
Availability														
Rack 3 Downtime	Hours	0	0	1.2	17.4	210	35.7	23.5	331.2	20.6	9.5	6.2	12.1	667
Rack 4 Downtime	Hours	0	0	1.2	0	18.1	369.4	23.3	213.4	20.6	9.7	6.3	11.9	674
Rack 3 Availability	%	100%	100%	100%	98%	72%	95%	97%	55%	97%	99%	99%	98%	92%
Rack 4 Availability	%	100%	100%	100%	100%	98%	49%	97%	71%	97%	99%	99%	98%	92%
Combined Availability	%	100%	100%	100%	99%	85%	72%	97%	63%	97%	99%	99%	98%	92%
Specific Conductance														
Feed Water	µS/cm	2519	2563	2608	2646	2697	2769	2824	2320	2634	2592	2590	2593	2596
Permeate	µS/cm	23	22	23	22	22	26	24	22	23	23	23	23	23
Product Water	µS/cm	379	378	378	379	378	377	377	379	374	373	373	374	377

Table 2 Annual Water Deliveries (JVWCD Meter)

Year Ending	Annual Delivery	Rolling Average
May 31, 2007	3,843	
May 31, 2008	3,299	3,571
May 31, 2009	3,548	3,563
May 31, 2010	3,414	3,526
May 31, 2011	3,705	3,562

Figure 1 Annual Water Deliveries (JVWCD Meter)



Quality of Delivered Water

Paragraph 4.5 of the Project Agreement requires that KUC provide Treated Water, defined in Paragraph 1.39 as water with concentrations of sulfate less than 250 mg/l and total dissolved solids (TDS) less than 250 mg/l. Table 3 and Figure 2 present laboratory results of TDS in periodic grab samples during the reporting period. (It is chemically impossible for the sulfate concentration to exceed the TDS concentration; thus, compliance with the TDS criterion assures compliance with the sulfate criterion.)

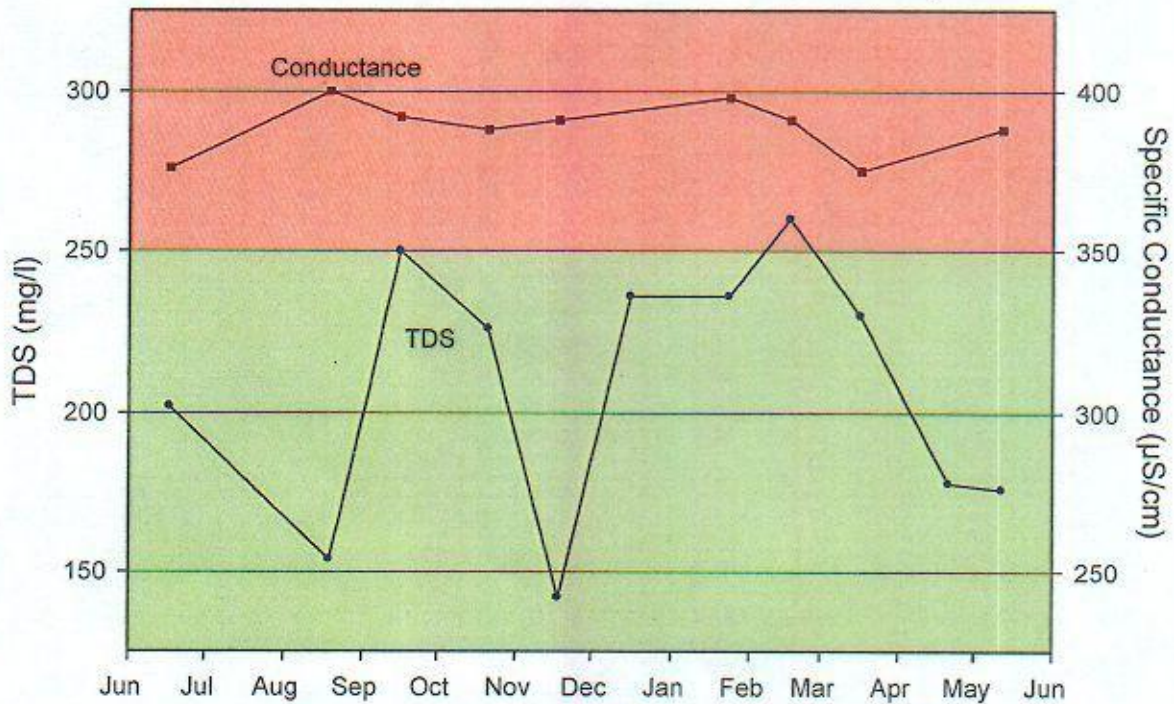
Grab sample results are below 250 mg/l TDS for all samples, except one. Table 3 also reports laboratory specific conductance measurements corresponding to each TDS measurement. KUC notes that on the one occasion, February 2011, the TDS laboratory measurement exceeded 250 mg/l there was not a corresponding spike in grab sample specific conductance, which is a function of TDS. As we have in the past, KUC concludes that the laboratory TDS measurement for the grab sample in February 2011 is not representative of Zone A product Water quality, but is attributable to the inherent variability in measuring TDS in very clean water.

Table 1 reports average monthly specific conductance based on these readings. These monthly averages vary little over the reporting period, indicating a consistent quality of water delivered to JWCD.

Table 3 Zone A Plant Product Water Quality

Sample Date	TDS (mg/l)	Specific Conductance (µS/cm)
06/17/10	202	376
08/19/10	154	400
09/16/10	250	392
10/21/10	226	388
11/18/10	142	391
12/16/10	236	
01/24/11	236	398
02/17/11	260	391
03/17/11	230	375
04/21/11	178	
05/12/11	176	378

Figure 2 TDS and Specific Conductance of Delivered Water



Period of Operation

The Zone A Plant operated at 92% availability during the reporting period. Availability was affected by the failure of well BFG1200 in October of 2010 and the failure of well B2G1193 in January 2011. Combined these wells were down for 47 days, during which time the Zone A Plant operated at only 50% capacity.

KUC did not invoke *force majeure* at any time during the reporting period.

Division of Drinking Water Permit Compliance

KUC maintained full compliance with its permit issued by the Division of Drinking Water for the Zone A Plant.

Modifications

A dedicated RO concentrate discharge pipeline was installed and put into service in February of 2011. This enables the RO concentrate to be delivered directly to the tailings line, bypassing and preventing scaling of downstream piping, valves, and pumps where the concentrate mixed with other waters.

Jordan Valley Water Conservancy District Relations

KUC received no negative reports from JWCD regarding operation of the plant or water quality. KUC participated in quarterly Oversight Committee meetings with JWCD as prescribed in Paragraph 3 of the Project Agreement, during which plant operation results were presented and evaluated. The Zone A Plant management and operators have developed direct relationships with their counterparts at JWCD, allowing efficient communication of matters affecting day-to-day plant operations to JWCD.

Community and Media Relations

KUC received no negative reports, either directly or through JWCD, regarding quality or taste from JWCD customers receiving water from the plant. KUC did not receive any notice of potential third party impacts to water quality or quantity in Zone A or quality in Zone B and no matters were referred to the informal independent review process.

KUC continued to provide tours of the plant during the reporting to outside groups as requested. KUC received no media inquiries about the plant during the reporting period.

Outlook for Next Reporting Year

KUC anticipates no constraint on continued delivery of high-quality water in the next reporting year. KUC is considering two improvement projects relating to the plant. First, KUC is experiencing deteriorating efficiency of well LTG1147 and will redevelop that well in the next year. Second, KUC is still studying potential locations and benefits of an additional RO plant source well; such a well is not necessary for plume containment, but may be beneficial as a supplemental and/or backup source of water to the plant. Details of the supplemental supply well will be discussed with the Trustee's representative as they mature.

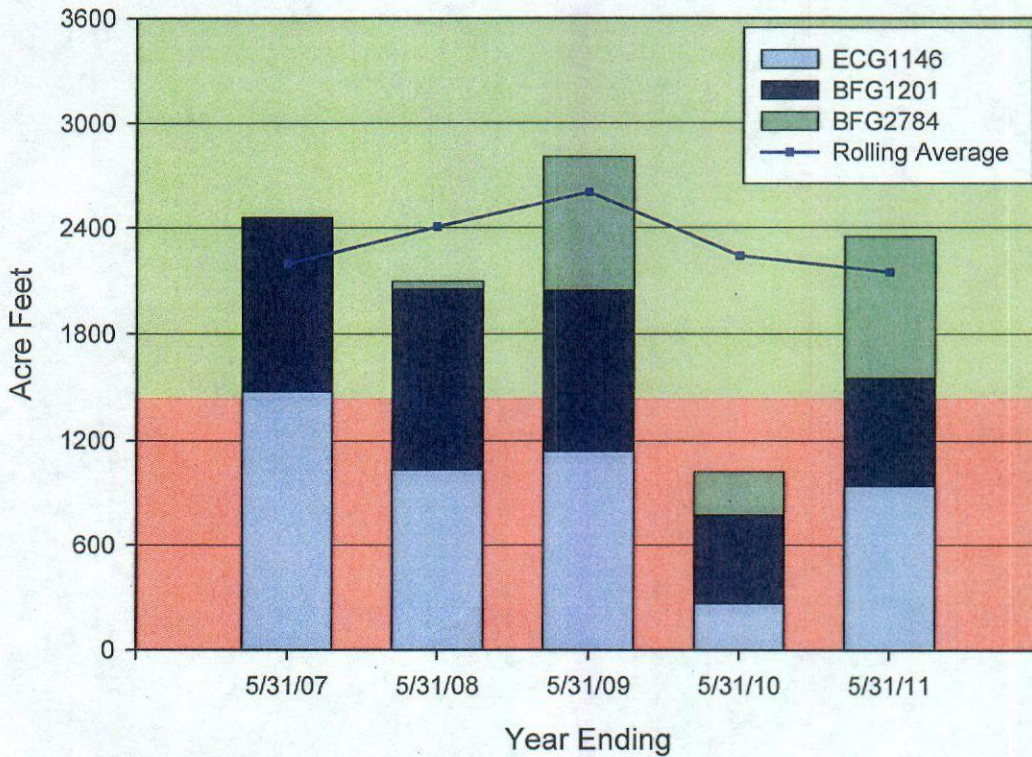
Acid Plume Core Extraction

Paragraph V.B of the NRD Consent Decree requires that KUC extract a minimum of 400 acre-ft per year on a five-year rolling average from the acid plume. The annual, cumulative, and 5-year rolling average acid plume extraction is reported in Table 4 and shown on Figure 3. KUC is in full compliance with extraction requirements of the NRD Consent Decree.

Table 4 Acid Plume Extraction (acre-feet)

Year Ending	Well ECG1146	Well BSG1201	Well BSG2784	Total Extracted	Cumulative Extracted	5-Year Rolling Average Extracted
5/31/2007	1,474	984	N/A	2,458	12,998	2,194
5/31/2008	1,034	1,023	39	2,096	15,094	2,405
5/31/2009	1,138	912	756	2,806	17,901	2,603
5/31/2010	262	516	243	1,022	18,922	2,239
5/31/2011	940	617	791	2,347	21,269	2,146

Figure 3 Acid Plume Extraction



If you should have any questions regarding the content of this report, do not hesitate to contact me at 569-7128.

Regards,

Kelly L. Payne, P.G.
 Manager - Environment

cc: Alan Packard, JWWCD (via email)
 Mark Atencio, JWWCD (via email)
 Doug Bacon, DERR (via email)
 Rebecca Thomas, US EPA (via email)