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Forest Service
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File Code: 2540
Date: January 19, 2011

Mr. Steve Rosenbaum
California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive, Suite #200
Rancho Cordova, CA 95670-6114

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Dear Mr. Rosenbaum:

Attached please find a complete set of 2010 water quality monitoring reports by the U.S. Department of Agriculture, Forest Service, Plumas National Forest, for the Walker Mine Tailings in Plumas County, California. The four reports are (1-3) Quarterly Monitoring Reports for June, August, and September 2009 and (4) the Annual Monitoring Report for Calendar Year 2010.

Results of the 2010 sampling show, continued, significant reductions in pollutants resulting from decreased surface water flow across the tailings. The reduction in pollutants is the expected result of construction of the Dolly Creek diversion structure and channel and subsequent Dolly Creek inlet structure retrofit separating the surface flow from the tailings material. Copper remains the pollutant of concern and the sample results indicate that significant levels of copper continue entering Dolly Creek from the Walker Mine Site.

All field sampling and testing was performed by Sierra Environmental of Quincy, CA and water samples were then analyzed by BSK Laboratories in Fresno, CA and Caltest in Napa, CA.

Please call Ryan Nupen of this office at (530) 283-7712 if you have any questions.

Sincerely,

Alice B Carlton

ALICE B. CARLTON
Forest Supervisor

cc: Dennis J Geiser, Brad Shipley, Mikovsky Rose

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2010 Walker Mine Tailings Monitoring Report

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ANNUAL MONITORING REPORT

Discharger: USDA Forest Service, Plumas National Forest

Facility: Walker Mine Tailings, Plumas County

Monitoring Period: Calendar Year 2010

Findings:

(1) Surface Water. Samples were collected in July, August and October 2010. Adjusting for hardness at the compliance station on Little Grizzly Creek (R-5), the calculated limitation for dissolved copper for the three sampling periods ranged from 0.0 ug/L to 3.7 ug/L. The limitation for copper, 4.95ug/L, set in Waste Discharge Requirements Order No. 5-00-028 was not exceeded during any of the sampling times (the average dissolved copper concentration at R-5 was 2 ug/L down from an average of 6.2 ug/L in 2009 and 11 ug/L in 2008). The limitations for iron and zinc were not exceeded in any of the R-5 samples collected.

Low concentrations of dissolved copper were detected at R-3, the background station on Little Grizzly Creek, and R-4, Little Grizzly Creek above the confluence with Dolly Creek, during each of the three sampling events (see Table 1 and attached Map). Reviewing the 88 copper testing results from 1991 to present for R-3 and R-4 indicates no significant trends. The average dissolved copper concentration for the two sites over this period is very similar (2.8 ug/L for R-3 and 3.4 ug/L for R-4). Copper concentrations above the laboratory detection limits were found in the waters of Little Grizzly Creek above the confluence with Dolly Creek just 33% (R-3) and 35% (R-4) of the time. However, the concentrations found frequently do not follow the hypothesis that the copper concentration in Little Grizzly Creek is increasing as it flows past the tailings material. Only 20% of the sampling events show higher dissolved copper concentrations at R-4 than at R-3 and about half the time that copper is detected at R-3 it is not detected at all downstream at R-4. There is actually little concrete explanation for the detection of copper at the R-3 station. The only apparent contamination of Little Grizzly Creek at that location is the occasional drift of tailings material blown by the wind into this upstream area. Even with this minor contamination pathway, it does not seem plausible that concentrations of copper in samples taken at R-3 could be detected.

In two of the three sampling events (August, and October) dissolved copper was found at R-1, Dolly Creek above the tailings area, in concentrations that exceeded the limitations established for freshwater aquatic life protection. The July and August results from the R-2 samples, Dolly Creek below the tailings area, confirm the tailings area as the primary source of copper to the receiving waters. Over the three sampling events, the increase in copper concentration from R-1 to R-2 amounted to 57%, in July, and 91%, in August, of the copper found at R-2 (see Table 2 and Chart 1).

The reduction in copper concentrations between stations R-2 and R-5, the compliance station on Little Grizzly Creek – presumably due to dilution - was 97% in July and 86% in September. There was no flow at R-2 during the October sampling event as the Dolly Creek inlet diversion structure was sealed and functioning. The 2010 water year was considered slightly above average and received 110% of its annual average precipitation. Table 3 displays flow rates for the sampling periods from 1991 through 2010.

(2) Groundwater. Groundwater samples were collected from three monitoring wells (W-3, W-5 and W-7) in July and October of 2010 (see attached map). A summary of the groundwater test results for sampling performed in 1994, 1995, 2000-2004, 2007-2010 is presented in Table 4 (samples were not collected from 1996-1999 or 2005-2006). Test results for total copper, iron, and zinc in the 1994 and 1995 samples indicate that small concentrations of these metals are present in the tailings material, in both dissolved and non-dissolved states, throughout the site. The characterization of the tailings material in 1992 by Westec confirmed presence of these constituents throughout the tailings area. The characterization program included not only seven monitoring well but also an additional seven boreholes.

Copper, iron, and zinc were detected in both wells during each sampling period. There was also a notable increase in dissolved iron in W-5 where the July and October test results were 1,100ug/L and 30,000 ug/L, respectively. In well W-7 the analysis done in July and September showed that it had no iron in it.

Previously, the detection of dissolved iron has been relatively rare in any of the wells. For the 48 samples analyzed for iron from 2000 to 2004, and 2007-2010, iron was detected in 26 samples (54% detection). The mean and median dissolved concentrations for samples with detected iron are 3846 ug/L and 230 ug/L (respectively). The median falls well below the prescribed water quality limitation at R-5 of 1000 ug/L but the mean was greatly increased due to the unexpectedly high laboratory results for W-5 in 2007, 2008 , 2009 and 2010 as well as an increase in W-7. For zinc, the mean and median detected dissolved concentrations are 7.1 ug/L and 5.4 ug/L with a maximum detected concentration of 21.0 ug/L. All of these values are well below the prescribed limitation for zinc which is 66 ug/L. Zinc concentrations are dependent upon the measured water hardness, which averaged 67.2 mg/L as $CaCO_3$ for the 2000-2004 and 2007-2008 surface water samples at R-5 (with a median of 75 mg/L as $CaCO_3$). Another way in which the presence of zinc can be predicted is by looking at the presence of copper at Walker Mine Tailings. Because of the physical similarities between copper and zinc and given the overall water quality records at this site, the presence of zinc when copper is present is 70% of the time.

Well W-7 is situated upgradient and off of the tailings site and is used as the background well. When compared with W-7 sample results, dissolved iron and zinc concentrations detected in downgradient wells W-3 and W-5 (both wells situated on the tailings) do not demonstrate an increase in the concentration of these metals as groundwater passes through the tailings material. For zinc, an increased downgradient concentration was observed in just 1 of the 20 sample events conducted from 2000 to 2004. For iron, an

increased downgradient concentration in W-3 or W-5 is documented in just 4 of the 20 events.

In analyzing the groundwater sample results for copper, it is best to look closely at the samples collected between 2002 and 2004 and 2007 to 2010. These samples were analyzed using methods and instrumentation that allowed a very sensitive detection level of 1.0 ug/L or less (the 2000 samples were analyzed with a detection level of 5.0 ug/L and the 2001 detection level was 10 ug/L).

Additionally, only one of the 30 groundwater samples collected between 2000 and 2004 resulted in a dissolved copper concentration of more than 5.0 ug/L (the detection level used for the 2000 anlyses). The sample at W-3 for September 2001 resulted in a dissolved copper concentration of 12 ug/L. Well W-3 is situated on the tailings very close to the Dolly Creek channel. The well-documented high concentrations of dissolved copper in the Dolly Creek surface water are a likely source for the elevated copper concentration in this groundwater sample.

As stated above, the low levels of dissolved copper were observed in twenty nine of the forty 2002 – 2004 and 2007-2010 groundwater samples. Of the twenty nine instances twenty three were under 3.4 ug/L. Moreover, a trend of increasing copper concentration as groundwater flows through the tailings is not demonstrated by the well data. For dissolved copper, an increased downgradient concentration in wells W-3 and W-5, when compared with the background well W-7, was observed in 6 of the 14 sample events conducted from 2002 - 2004 and 2007 - 2010. This 43% trend indicates – as do the rest of the groundwater metal data – that low groundwater copper concentrations are distributed practically at random across the tailings pile.

From 2007 through 2009, copper concentrations increased in W-5, and W-7 but have now dropped back below detection limits. It is hypothesized that during diversion of Dolly Creek and construction of the new lined channel the copper may have been mobilized locally by vibration and/or compaction of the strata that decreased pore space or caused pumping that disturbed the groundwater and temporarily increased the concentrations.

With the elevation of the Little Grizzly Creek channel approximately 20 feet below the surface of the tailings area, there is a strong gradient towards Little Grizzly Creek all along its course with the tailings area. These site conditions indicate that the potential exists for contamination of Little Grizzly Creek due to groundwater seeping from the tailings pile.

The results of previous sampling did not indicate any significant trends for dissolved metal concentrations. Additionally, despite the almost continuous line of groundwater seeps along the base of the tailings area and the Little Grizzly Creek channel bank, the metals concentration results are nearly identical (as discussed above) for samples taken from Little Grizzly Creek above and below the tailings interface (at R-3 and R-4, both upstream of the confluence with Dolly Creek).

One can basically conclude that even though copper and zinc are present in the tailings material throughout the site, they are not entering into solution (except in surface water along the Dolly Creek channel). This is confirmed by the surface water-sampling program, in which samples taken at the base of the tailings in Little Grizzly Creek (R-4) generally indicate that these constituents are at non-detectable levels. It's only after Little Grizzly Creek mixes with Dolly Creek that soluble copper and zinc are detected.

Therefore, the groundwater pathway is demonstrated to be a decidedly unlikely pathway for tailings pollution on Little Grizzly Creek. The Forest Service will continue to monitor groundwater metals concentrations in wells W-5 and W-7 due to increased iron concentrations.

The water level in each well was measured in 2010 during each of the three sampling events. Maps displaying the groundwater flow gradient and direction were produced for each event (attached). Generally, the groundwater in the tailings area drains in two directions, towards the tailings dam near the end of Dolly Creek and towards the settling pond near R-6. The groundwater gradient steepens by the end of the summer season, dropping nearly five feet at the dam and ten feet at the settling pond.

Table 5 lists the measured groundwater depths for the years in which this data has been collected (1993 – 1995 and 2000 - 2010). Groundwater elevations at W-3 are important to look at from the standpoint of the proposed anaerobic wetland. The depth to water in 2010 dropped 1.98 feet from August to September. The depth to groundwater at W-3 averages 5.43 feet and the seasonal water table drop is typically about two feet. Except for the driest year since monitoring began, water appears to flow over the tailings dam at all times; in August 1992, Dolly Creek flows did not reach the tailings dam during the heat of the day. With the surface flow from Dolly Creek no longer contributing to the recharge of groundwater in the tailings it is expected that summer and fall groundwater levels will drop.

In September and October of 2009 the Dolly Creek inlet structure was retrofitted to remedy leakage and loss of surface flow. The retrofit included installation of a concrete settling basin and concrete outlet trough attached to the existing lined channel. Both additions were placed on a low permeability fill. The result of this retrofit is the capture of all surface flow and interception of some shallow groundwater. Results were immediate with a substantial reduction in flow from the toe of the inlet structure spillway and the simultaneous loss of flow over the tailings dam spillway at R-2.

(3) Channel Substrate Analysis (Pebble Count). One of the measured changes that should occur as a result of rehabilitating the tailings area is a decreased transport of tailings material to Little Grizzly Creek. Though most of the material moves during times of high flows when sampling does not normally occur, evidence of its occurrence should be measurable by analyzing channel substrate size classes. In past years, a "Wolman pebble count" has been conducted once a year in the fall to analyze the channel substrate.

Pebble counts at the two established pebble count transects were not monitored since. However, pebble count data for the previous four years (2000-2003) exhibited very similar results: the R-5 transect (on Little Grizzly Creek below its confluence with Dolly Creek) did contain sand-sized material, including the medium, fine and very fine sands found over most of the tailings area, whereas the R-6 (on Little Grizzly Creek above its confluence with Dolly Creek) transect did not. Based on the data collected and visible evidence made at the time the transects were established, most of the sands are being washed downstream during winter and spring flows, but material from the tailings area apparently continues to wash into Little Grizzly Creek for an extended period of time and some of it is trapped around the coarser material of the R-5 channel section. Pebble counts will again be performed at the two established transects in 2011. It is expected that the amount of sand sized material will now diminish with the completion a functional diversion and lined channel separating Dolly Creek from the tailings material.

Copper Concentrations at R-3 and R-4
Little Grizzly Creek Above and Below Walker Tailings

Table 1

Date	R-3 Copper mg/L	R-4 Copper mg/L
May 91	0	0.0020
Jun 91	0	0
Jul 91	0	0
Aug 91	0	0.0030
Sep 91	0	0
Oct 91	0	0
Nov 91	0	0
Dec 91	0	0.0030
Apr 92	0	0
May 92	0	0.0390
Jun 92	0.0039	0
Jul 92	0	0
Aug 92	0.0036	0
Sep 92	0.1200	0.1200
Oct 92	0	0.0024
Nov 92	0	0
May 93	0	0
Jun 93	0.0028	0
Jul 93	0.0024	0.0070
Aug 93	0	0
Sep 93	0	0.0083
Oct 93	0	0
Nov 93	0	0.0040
May 94	0	0
Jun 94	0.0090	0.0057
Jul 94	0	0
Aug 94	0	0
Sep 94	0	0
Oct 94	0	0
Jun 95	0	0
Jul 95	0	0
Aug 95	0.0041	0
Sep 95	0	0
Oct 95	0	0
Nov 95	0	0.0023
May 96	0	0
June 96	0	0
July 96	0.0029	0
Aug 96	0.0022	0
Sept 96	0	0
May 97	0	0
June 97	0	0
July 97	0	0
Aug 97	0	0
Sept 97	0	0
Oct 97	0	0
June 98	0	0
July 98	0.0110	0.0034
Aug 98	0.0046	0.0015
Sept 98	0	0
Oct 98	0.0130	0.0088
Jun 99	0	0
Jul 99	0	0
Aug 99	0	0
Sept 99	0	0
Oct 99	0	0

Date	R-3 Copper mg/L	R-4 Copper mg/L
May 00	0	0
Jul 00	0.0230	0
Sep 00	0	0
May 01	0	0
Jul 01	0	0
Sep 01	0	0
May 02	0.0051	0
Jul 02	0.0039	0.0013
Sep 02	0	0.0037
June 03	0.0017	0.0013
Jul 03	0	0.0027
Sep 03	0.0032	0.0010
May-04	0.0034	0.0420
Jul-04	0	0
Sep-04	0	0
Jun-05	0	0
Jul-05	0	0
Sep-05	0	0
Jun-06	0.0032	0.0012
Jul-06	0.0033	0.0011
Sep-06	0	0
May 07	0.0049	0.0043
July 07	0.0012	0.0035
Sep 07	0.0069	0.0078
Jun-08	0.0017	0.0050
Jul-08	0.0005	0.0029
Sep-08	0.0005	0.0016
May-09	0.0006	0.0020
Jul-09	0.0008	0.0030
Sep-09	0.0033	0.0035
x	0.0028	0.0034
n	89	89
s	0.0130	0.0140
max	0.1200	0.1200
min	ND	ND

Date	R-3 Copper mg/L	R-4 Copper mg/L	
May 91	0	0.0020	1
Jun 91	0	0	
Jul 91	0	0	
Aug 91	0	0.0030	1
Sep 91	0	0	
Oct 91	0	0	
Nov 91	0	0	
Dec 91	0	0.0030	1.0000
Apr 92	0	0	
May 92	0	0.0390	1.0000
Jun 92	0.0039	0	
Jul 92	0	0	
Aug 92	0.0036	0	
Sep 92	0.1200	0.1200	
Oct 92	0	0.0024	1
Nov 92	0	0	
May 93	0	0	
Jun 93	0.0028	0	
Jul 93	0.0024	0.0070	1.0000
Aug 93	0	0	
Sep 93	0	0.0083	1
Oct 93	0	0	
Nov 93	0	0.0040	1.0000
May 94	0	0	
Jun 94	0.0090	0.0057	
Jul 94	0	0	
Aug 94	0	0	
Sep 94	0	0	
Oct 94	0	0	
Jun 95	0	0	
Jul 95	0	0	
Aug 95	0.0041	0	
Sep 95	0	0	
Oct 95	0	0	
Nov 95	0	0.0023	1
May 96	0	0	
June 96	0	0	
July 96	0.0029	0	
Aug 96	0.0022	0	
Sept 96	0	0	
May 97	0	0	
June 97	0	0	
July 97	0	0	
Aug 97	0	0	
Sept 97	0	0	
Oct 97	0	0	
June 98	0	0	
July 98	0.0110	0.0034	
Aug 98	0.0046	0.0015	
Sept 98	0	0	
Oct 98	0.0130	0.0088	
Jun 99	0	0	
Jul 99	0	0	
Aug 99	0	0	
Sept 99	0	0	
Oct 99	0	0	
May 00	0	0	
Jul 00	0.0230	0	
Sep 00	0	0	
May 01	0	0	
Jul 01	0	0	
Sep 01	0	0	
May-02	0.0051	0	
Jul-02	0.0039	0.0013	
Sep-02	0.0000	0.0037	1
Jun-03	0.0017	0.0013	
Jul-03	0.0000	0.0027	1
Sep-03	0.0032	0.0010	
May-04	0.0034	0.0420	1
Jul-04	0	0	
Sep-04	0	0	
Jun-05	0	0	
Jul-05	0	0	
Sep-05	0	0	
Jun-06	0.0032	0.0012	
Jul-06	0.0033	0.0011	
Sep-06	0.0000	0.0000	
May 07	0.0049	0.0043	
July 07	0.0012	0.0035	1
Sep 07	0.0069	0.0078	1
Jun-08	0.0017	0.0050	1
Jul-08	0.0005	0.0029	1
Sep-08	0.0005	0.0016	1
May-09	0.0006	0.0020	1
Jul-09	0.0008	0.0030	1
Sep-09	0.0033	0.0035	1
Jul-10	0.0000	0.0000	
Aug-10	0.00340	0.0027	
Sep-10	0.00340	0.0031	
			20
			20
x	0.0028	0.0034	
n	89	89	
s	0.0130	0.0140	
max	0.1200	0.1200	
min	ND	ND	
n>0	29	31	
%>0	33%	35%	

Summary of Copper Data for R-1, R-2 and R-5
1991-2010

Table 2

Year	R-1 Cu Conc. (mg/L) May/June	R-1 July/Aug.	R-1 September	R-2 Cu Conc. (mg/L) May/June	R-2 July/Aug.	R-2 September	R-5 Cu Conc. (mg/L) May/June	R-5 July/Aug.	R-5 September	hardness may/june	hardness july	hardness sept
1991	0.110	0.044	0.023	0.572	0.256	0.362	0.040	0.060	0.102	39.000	75.000	77.000
1992	0.034	0.034	0.033	0.250	0.360	0.240	0.000	0.066	0.000	26.000	80.000	80.000
1993	0.024	0.110	0.047	0.370	0.450	0.230	0.036	0.140	0.099	29.000	75.000	76.000
1994	0.074	0.029	0.021	0.500	0.210	0.088	0.050	0.051	0.017	57.000	70.000	77.000
1995	0.086	0.055	0.042	0.190	0.220	0.100	0.024	0.070	0.053	32.000	57.000	75.000
1996	0.065	0.017	0.014	0.150	0.180	0.066	0.032	0.076	0.031	36.000	62.000	76.000
1997	0.002	0.011	0.013	0.092	0.082	0.060	0.015	0.036	0.029	44.000	79.000	79.000
1998	0.050	0.015	0.011	0.150	0.180	0.080	0.012	0.055	0.040	160.000	75.000	94.000
1999	0.016	0.014	0.017	0.017	0.180	0.071	0.002	0.068	0.028	32.000	64.000	87.000
2000	0.014	0.016	0.009	0.310	0.220	0.096	0.033	0.085	0.033	27.000	75.000	67.000
2001	0.020	0.012	0.014	0.270	0.130	0.042	0.029	0.030	0.019			
2002	0.030	0.015	0.009	0.450	0.310	0.092	0.024	0.110	0.022			
2003	0.024	0.027	0.011	0.097	0.320	0.100	0.034	0.120	0.030			
2004	0.028	0.021	0.008	0.003	0.220	0.052	0.380	0.067	0.000			
2005	0.019	0.016	0.005	0.260	0.290	0.100	0.038	0.090	0.030			
2006	0.024	0.012	0.007	0.240	0.230	0.078	0.048	0.095	0.031			
2007	0.017	0.014	0.015	0.076	0.059	0.034	0.012	0.021	0.012			
2008	0.018	0.005	0.004	0.042	0.014	0.010	0.026	0.004	0.003			
2009	0.045	0.008	0.045	0.103	0.083	N/A	0.003	0.012	0.004			
2010	N/A	0.004	0.004	N/A	N/A	0.103	N/A	0.004	0.002			
x	0.04	0.02	0.02	0.22	0.21	0.11	0.04	0.06	0.03			1813.000
n	19	20	20	19	19	19	19	20	20			67.148148
s	0.03	0.02	0.01	0.16	0.11	0.08	0.08	0.04	0.03			
max	0.110	0.110	0.047	0.572	0.450	0.362	0.380	0.140	0.102			
min	0.002	0.004	0.004	0.003	0.014	0.010	0.000	0.004	0.000			

Summary of Flow Rates at R-1, R-2 and R-5
1991-2010

Table 3

Year	R-1 Flow Rate (cfs) May/June	R-1 July/Aug.	R-1 September	R-2 Flow Rate (cfs) May/June	R-2 July/Aug.	R-2 September	R-5 Flow Rate (cfs) May/June	R-5 July/Aug.	R-5 September
1991	0.88	0.52	0.60	1.28	0.31	0.28	19.62	0.84	1.35
1992	0.18	0.14	0.11	0.12	0.06	0.02	1.06	0.43	0.22
1993	7.28	1.31	0.73	7.28	1.25	0.57	46.10	3.53	1.10
1994	0.31	0.14	0.14	0.72	0.15	0.01	7.30	0.45	0.44
1995	6.97	2.48	1.05	8.22	2.38	2.01	97.20	7.46	1.88
1996	12.30	1.10	0.90	15.60	1.30	1.00	80.90	3.40	1.70
1997	5.05	1.24	0.66	5.69	1.18	0.86	54.09	1.43	1.34
1998	9.60	1.80	1.00	10.20	2.00	0.90	120.00	7.10	2.10
1999	5.24	1.30	0.78	5.74	1.13	0.72	34.97	3.74	1.35
2000	2.00	0.70	0.40	2.20	0.70	0.40	23.40	2.10	1.00
2001	0.44	0.18	0.24	0.42	0.13	0.28	3.99	0.52	0.73
2002	1.25	0.37	0.34	1.62	0.31	0.18	18.13	1.12	0.56
2003	3.41	0.77	0.45	3.78	0.75	0.38	22.05	1.67	1.20
2004	1.37	0.14	0.07	1.29	0.34	0.08	13.39	1.99	0.23
2005	2.88	0.66	0.52	2.91	0.98	0.57	22.78	2.34	1.16
2006	10.20	0.99	0.26	14.10	1.25	0.26	12.30	2.45	0.43
2007	0.19	0.07	0.07	0.19	0.08	0.06	1.48	0.19	0.14
2008	0.20	0.23	0.29	0.09	0.11	0.06	2.66	0.60	0.38
2009	1.33	0.50	0.26	0.44	0.13	0.00	29.05	3.16	1.40
2010	1.01	0.44	0.35	0.13	noflow	noflow	8.80	0.93	1.82
x	3.60	0.75	0.46	4.10	0.77	0.45	30.96	2.27	1.03
n	20	20	20	20	19	19	20	20	20
s	3.79	0.64	0.31	4.76	0.68	0.49	33.32	2.04	0.61
max	12.30	2.48	1.05	15.60	2.38	2.01	120.00	7.46	2.10
min	0.18	0.07	0.07	0.09	0.06	0.00	1.06	0.19	0.14

Ground water Quality at walker mine tailings

Well No.	Sample Date	cooper total (mg/L)	cooper tered (mg/L)	iron total (mg/L)	iron tered (mg/L)	zinc total (mg/L)	zinc tered (mg/L)
W-3	07/18/1994	0.0200	-	1.4000	-	ND	-
W-3	08/24/1994	0.0200	ND	1.4000	ND	ND	ND
W-3	09/22/1994	ND	ND	0.7300	0.1700	ND	ND
W-3	10/25/1994	ND	ND	1.1000	0.7000	ND	ND
W-3	06/24/1995	ND	ND	1.6000	ND	ND	ND
W-3	11/13/1995	ND	ND	0.3600	0.0400	ND	ND
W-3	05/24/2000	-	ND	-	0.0210	ND	ND
W-3	09/13/2000	-	ND	-	ND	ND	ND
W-3	05/22/2001	-	ND	-	ND	-	ND
W-3	09/25/2001	-	0.0120	-	ND	-	ND
W-3	05/10/2002	-	ND	-	ND	-	ND
W-3	09/26/2002	-	0.0021	-	ND	-	ND
W-3	05/23/2003	-	0.0020	-	ND	-	0.0032
W-3	09/18/2003	-	0.0025	-	ND	-	ND
W-3	05/21/2004	-	0.0015	-	0.0620	-	0.0069
W-3	09/05/2004	-	0.0024	-	ND	-	0.0016
W-3	5/31/2007	-	0.0030	-	0.3600	-	0.0120
W-3	9/17/2007	-	0.0510	-	0.0330	-	0.0210
W-3	5/19/2009		0.0043		0.0881		0.0019
W-3	9/22/2009		0.0005		0.6810		0.0018
W-3	6/21/2010		ND		ND		ND
W-3	9/30/2010		ND		0.6000		0.0009
W-4	08/24/1994	0.8900	0.5500	93.000	0.4100	0.0800	0.0400
W-4	09/22/1994	1.7000	0.6200	120.000	0.4100	0.1500	0.0500
W-4	10/25/1994	0.9800	ND	100.000	32.0000	0.1200	ND
W-4	06/24/1995	ND	ND	28.000	28.0000	ND	ND
W-4	11/13/1995	ND	ND	47.000	25.0000	ND	ND
W-5	07/18/1994	0.1100	-	32.0000	-	ND	-
W-5	08/24/1994	0.0400	ND	31.0000	0.1000	ND	ND
W-5	09/22/1994	0.0500	ND	30.0000	ND	ND	ND
W-5	10/25/1994	0.0600	ND	32.0000	2.2000	ND	ND
W-5	06/24/1995	ND	ND	2.5000	1.9000	ND	ND
W-5	11/13/1995	ND	ND	17.0000	0.1500	ND	ND
W-5	05/24/2000	-	ND	-	0.0680	ND	ND
W-5	09/13/2000	-	ND	-	0.7400	ND	ND
W-5	05/22/2001	-	ND	-	1.2000	-	ND
W-5	09/25/2001	-	ND	-	ND	-	ND
W-5	05/10/2002	-	ND	-	0.1400	-	ND
W-5	09/26/2002	-	0.0013	-	0.1200	-	ND
W-5	05/23/2003	-	0.0015	-	ND	-	ND
W-5	09/18/2003	-	0.0028	-	ND	-	0.0056
W-5	05/21/2004	-	0.0012	-	ND	-	0.0054
W-5	09/05/2004	-	0.0011	-	ND	-	ND
W-5	5/31/2007	-	0.0020	-	9.4000	-	0.0088
W-5	9/17/2007	-	0.0060	-	19.0000	-	0.0140
W-5	6/3/2008	-	0.0013	-	11.200	-	0.0077
W-5	9/9/2008	-	0.0006	-	15.700	-	0.0107
W-5	5/19/2009		0.0019		21.400		0.0024
W-5	9/22/2009		0.0101		15.100		0.0048
W-5	6/21/2010		ND		1.1000		ND
W-5	9/30/2010		ND		30.000		0.0017
W-6	08/24/1994	0.4600	ND	14.0000	ND	0.0400	ND
W-6	09/22/1994	0.9900	0.0100	31.0000	0.6900	0.0800	ND
W-6	10/25/1994	0.7200	0.0100	23.0000	0.2700	0.0200	ND
W-6	06/24/1995	ND	ND	ND	ND	ND	ND
W-6	11/13/1995	0.0900	ND	3.9000	0.0600	ND	ND
W-7	07/18/1994	ND	ND	1.9000	-	0.0200	-
W-7	08/24/1994	0.0200	ND	30.0000	0.4500	0.0500	ND
W-7	09/22/1994	0.0400	ND	43.0000	0.9600	0.0700	ND
W-7	10/25/1994	0.0400	ND	52.0000	1.1000	0.0600	ND
W-7	06/24/1995	ND	ND	ND	ND	ND	ND
W-7	11/13/1995	0.0100	ND	14.0000	0.6700	0.0200	0.0100
W-7	05/24/2000	-	ND	-	0.0790	-	ND
W-7	09/13/2000	-	ND	-	0.1800	-	ND
W-7	05/22/2001	-	ND	-	0.1400	-	ND
W-7	09/25/2001	-	ND	-	ND	-	ND
W-7	05/10/2002	-	ND	-	0.2800	-	ND
W-7	09/26/2002	-	0.0021	-	0.1000	-	0.0034
W-7	05/23/2003	-	0.0010	-	ND	-	0.0034
W-7	09/18/2003	-	ND	-	ND	-	0.0039
W-7	05/21/2004	-	0.0023	-	ND	-	0.0090
W-7	09/05/2004	-	ND	-	ND	-	0.0049
W-7	5/31/2007	-	0.0030	-	ND	-	0.0051
W-7	9/17/2007	-	0.0053	-	0.0880	-	0.0110
W-7	6/3/2008	-	0.0013	-	ND	-	0.0053
W-7	9/9/2008	-	0.0005	-	0.0310		0.0205
W-7	5/19/2009		0.0034		2.9600		0.0072
W-7	9/22/2009		0.0012		0.8280		0.0037
W-7	6/21/2010		ND		ND		ND
W-7	9/30/2010		ND		ND		0.0019

Table 5

Groundwater Depths at Walker Mine Tailings
1993 - 2010

Depth to Groundwater	Monitoring Well Number: Depth to Water (ft)							
From Top of Casing	W-1	W-2	W-3	W-4	W-5	W-6	W-7	Average Depth (ft)
Top of Casing Elevation	5759.24	5741.74	5738.83	5768.00	5754.09	5747.87	5754.91	
07-17-1993	13.34	2.14	5.12	16.96	7.90	5.64	1.06	7.45
07-18-1994	15.06	3.00	6.11	23.43	11.94	6.74	1.71	9.71
08-24-1994	15.35	3.26	6.59	24.52	12.88	7.63	2.07	10.33
09-22-1994	15.49	2.94	6.62	25.25	13.46	8.14	2.05	10.56
10-25-1994	15.59	2.60	6.28	25.90	13.97	8.33	1.91	10.65
06-24-1995	11.17	0.86	3.76	11.61	4.43	3.33	0.13	5.04
11-13-1995	14.75	2.34	5.98	22.64	11.32	7.09	1.03	9.31
05-24-2000	12.54	0.95	4.22	16.58	6.62	3.73	0.33	6.42
09-13-2000	14.80	2.77	6.08	22.76	11.34	7.09	0.25	9.30
05-22-2001	14.06	1.61	4.89	21.88	10.26	5.05	0.57	8.33
09-25-2001	15.27	3.16	6.69	25.21	13.39	8.25	1.68	10.52
05-10-2002	13.18	0.94	4.02	19.56	8.35	3.73	0.56	7.19
09-26-2002	14.96	2.92	6.40	24.37	12.59	7.87	1.43	10.08
05-23-2003	12.45	0.68	3.86	16.86	6.39	3.75	0.00	6.28
09-18-2003	14.54	2.58	6.08	22.84	11.35	7.16	0.79	9.33
05-21-2004	13.11	1.16	4.51	18.93	8.17	4.34	0.13	7.19
09-05-2004	14.57	2.63	6.30	23.52	11.89	7.44	1.20	9.65
06-16-2005	12.31	0.82	3.89	16.95	6.69	3.70	0.00	6.34
07-22-2005	13.26	1.63	5.26	18.96	8.45	5.66	0.42	7.66
09-15-2005	14.09	2.02	5.50	21.94	10.70	6.52	0.68	8.78
06-14-2006	11.19	0.68	4.39	14.24	5.68	4.20	0.00	5.77
06-24-2006	12.63	1.48	5.27	17.63	7.77	5.80	0.23	7.26
09-19-2006	13.88	2.31	6.05	21.34	10.29	7.06	0.59	8.79
05-31-2007	13.67	1.24	4.89	21.34	9.72	5.03	0.63	8.07
07-26-2007	14.11	2.19	5.90	22.86	11.32	6.18	1.44	9.14
09-17-2007	N/A	2.37	6.33	24.27	12.52	7.84	1.51	9.14
06-03-2008	N/A	0.47	4.23	20.77	9.41	4.21	0.87	6.66
07-31-2008	N/A	2.25	5.92	22.69	11.17	6.73	2.05	8.47
09-09-2008	N/A	2.49	6.29	23.93	12.20	7.59	2.05	9.09
05-19-2009	N/A	0.78	4.01	18.89	6.98	3.94	0.46	5.84
07-13-2009	N/A	1.62	5.36	20.17	9.23	5.82	1.39	7.27
09-22-2009	N/A	2.49	6.24	23.23	11.63	7.45	1.85	8.82
06-21-2010	N/A	1.70	4.61	17.73	7.38	4.63	0.75	6.13
08-12-2010	N/A	2.22	5.99	20.83	9.83	6.50	1.61	7.83
09-30-2010	N/A	0.78	4.01	18.84	6.98	3.94	0.46	5.84
Average Depth	13.81	1.95	5.43	21.03	10.07	6.06	0.94	8.47
n	25	29	29	29	29	29	29	29
s	1.27	0.86	0.96	3.57	2.57	1.63	0.71	1.70
max	15.59	3.26	6.69	25.90	13.97	8.33	2.07	10.65
min	11.17	0.47	3.76	11.61	4.43	3.33	0.00	5.04

Well W-1 was lost during construction summer 2007

Table 5

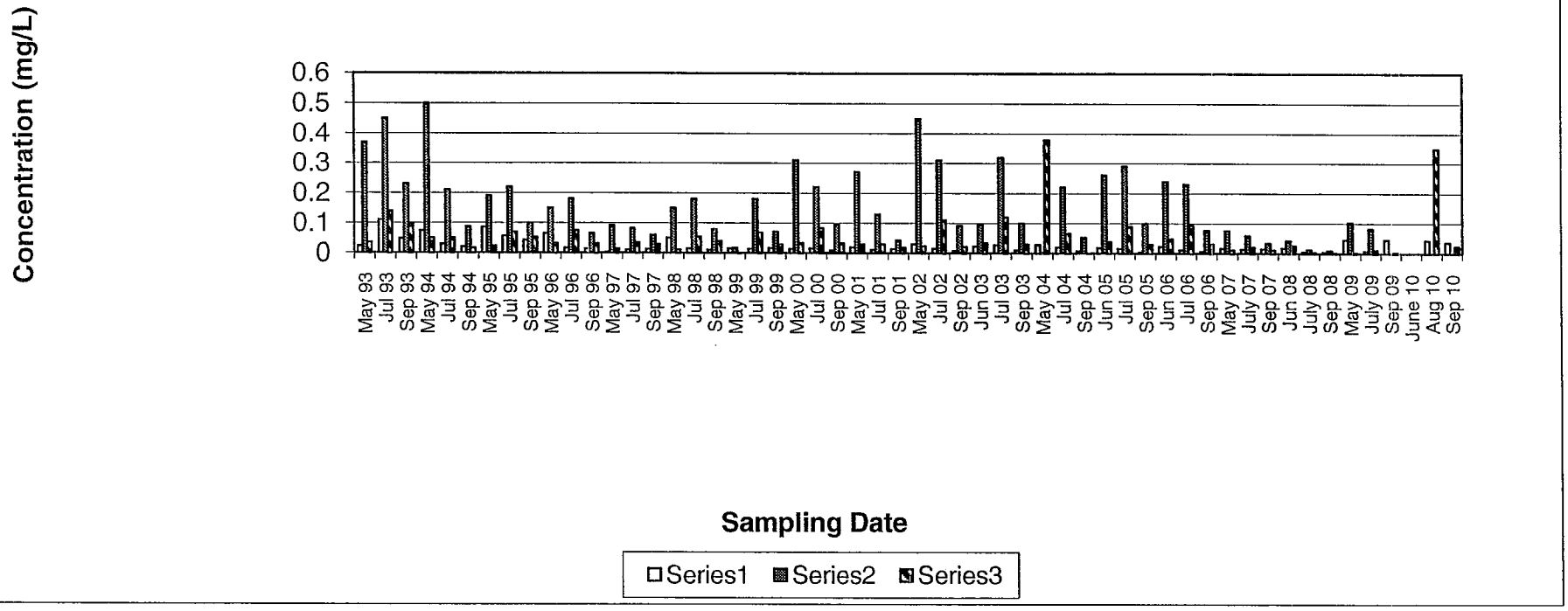
Groundwater Depths at Walker Mine Tailings
1993 - 2010

Depth to Groundwater	Monitoring Well Number: Depth to Water (ft)							
From Top of Casing	W-1	W-2	W-3	W-4	W-5	W-6	W-7	Average Depth (ft)
Top of Casing Elevation	5759.24	5741.74	5738.83	5768.00	5754.09	5747.87	5754.91	
07-17-1993	13.34	2.14	5.12	16.96	7.90	5.64	1.06	7.45
07-18-1994	15.06	3.00	6.11	23.43	11.94	6.74	1.71	9.71
08-24-1994	15.35	3.26	6.59	24.52	12.88	7.63	2.07	10.33
09-22-1994	15.49	2.94	6.62	25.25	13.46	8.14	2.05	10.56
10-25-1994	15.59	2.60	6.28	25.90	13.97	8.33	1.91	10.65
06-24-1995	11.17	0.86	3.76	11.61	4.43	3.33	0.13	5.04
11-13-1995	14.75	2.34	5.98	22.64	11.32	7.09	1.03	9.31
05-24-2000	12.54	0.95	4.22	16.58	6.62	3.73	0.33	6.42
09-13-2000	14.80	2.77	6.08	22.76	11.34	7.09	0.25	9.30
05-22-2001	14.06	1.61	4.89	21.88	10.26	5.05	0.57	8.33
09-25-2001	15.27	3.16	6.69	25.21	13.39	8.25	1.68	10.52
05-10-2002	13.18	0.94	4.02	19.56	8.35	3.73	0.56	7.19
09-26-2002	14.96	2.92	6.40	24.37	12.59	7.87	1.43	10.08
05-23-2003	12.45	0.68	3.86	16.86	6.39	3.75	0.00	6.28
09-18-2003	14.54	2.58	6.08	22.84	11.35	7.16	0.79	9.33
05-21-2004	13.11	1.16	4.51	18.93	8.17	4.34	0.13	7.19
09-05-2004	14.57	2.63	6.30	23.52	11.89	7.44	1.20	9.65
06-16-2005	12.31	0.82	3.89	16.95	6.69	3.70	0.00	6.34
07-22-2005	13.26	1.63	5.26	18.96	8.45	5.66	0.42	7.66
09-15-2005	14.09	2.02	5.50	21.94	10.70	6.52	0.68	8.78
06-14-2006	11.19	0.68	4.39	14.24	5.68	4.20	0.00	5.77
06-24-2006	12.63	1.48	5.27	17.63	7.77	5.80	0.23	7.26
09-19-2006	13.88	2.31	6.05	21.34	10.29	7.06	0.59	8.79
05-31-2007	13.67	1.24	4.89	21.34	9.72	5.03	0.63	8.07
07-26-2007	14.11	2.19	5.90	22.86	11.32	6.18	1.44	9.14
09-17-2007	N/A	2.37	6.33	24.27	12.52	7.84	1.51	9.14
06-03-2008	N/A	0.47	4.23	20.77	9.41	4.21	0.87	6.66
07-31-2008	N/A	2.25	5.92	22.69	11.17	6.73	2.05	8.47
09-09-2008	N/A	2.49	6.29	23.93	12.20	7.59	2.05	9.09
05-19-2009	N/A	0.78	4.01	18.89	6.98	3.94	0.46	5.84
07-13-2009	N/A	1.62	5.36	20.17	9.23	5.82	1.39	7.27
09-22-2009	N/A	2.49	6.24	23.23	11.63	7.45	1.85	8.82
06-21-2010	N/A	1.70	4.61	17.73	7.38	4.63	0.75	6.13
08-12-2010	N/A	2.22	5.99	20.83	9.83	6.50	1.61	7.83
09-30-2010	N/A	0.78	4.01	18.84	6.98	3.94	0.46	5.84
Average Depth	13.81	1.95	5.43	21.03	10.07	6.06	0.94	8.47
n	25	29	29	29	29	29	29	29
s	1.27	0.86	0.96	3.57	2.57	1.63	0.71	1.70
max	15.59	3.26	6.69	25.90	13.97	8.33	2.07	10.65
min	11.17	0.47	3.76	11.61	4.43	3.33	0.00	5.04

Well W-1 was lost during construction summer 2007

Chart 1

Copper Concentrations at R-1, R-2, & R-5
Dolly Creek and Little Grizzly Creek
1993-2010



June 2010

SURFACE AND GROUNDWATER TEST RESULTS AND SUPORTING DOCUMENTATION

MONITORING REPORT

Discharger: USDA Forest Service, Plumas National Forest

Facility: Walker Mine Tailings, Plumas County

Reporting Frequency: Quarterly

Monitoring Period: June 2010

Findings:

(1) Surface Water. Samples were collected on June 21, 2010. The surface water sample collected at the compliance station, R-5, Little Grizzly Creek near Brown's Cabin, exceeded the limitation for copper (see Table 1). The remaining R-5 constituents fell within the prescribed limitations for dissolved iron and zinc. The release of copper from the tailings area to Dolly Creek, as measured at R-2, showed none detected. Due to an error in analysis this sample was tested with a reporting limit of 0.05 mg/L and not analyzed to 0.5 ug/L. Concentrations of zinc were detected in only 1 of the 5 samples taken (R-2, 0.072 ug/L) exceeding the limitation of zinc. Dissolved Iron was detected at 2 of the 4 sampling locations The concentration of iron did not exceed the 1000 ug/L limitation.

(2) Groundwater. Samples were collected on June 21, 2010. Table 2 summarizes the findings for groundwater samples collected from the site. No concentrations of dissolved copper or zinc were found in any of the sampling wells (W-3,W-5, W-7). Dissolved iron was found in W-5 with a measured concentration of 1.1 mg/l. The reason for the dissolved iron at W-5 is unclear but represents a decrease over the dissolved iron from the May of 2009 sample. Dissolved iron was not found in W-7 in 2010 but in May 2009 it was found with a measured concentration of 132ug/l. These results will require out-year testing of W-5 and W-7 to continually monitor the marked change that has occurred in the groundwater iron concentrations at these locations.

Groundwater elevations were measured in six of seven wells at the site; W-1 was destroyed during construction in 2007. Depth to water measurements decreased slightly from May 2009. The results continue to show a definite gradient towards Little Grizzly Creek along the Dolly Creek Channel to the settling pond (R-6). With the elevation of the Little Grizzly Creek channel approximately 20 feet below the surface of the tailings area, there is a strong gradient towards little Grizzly Creek all along of its course adjacent to the tailings area.

Table 1. SURFACE WATER SUMMARY REPORT

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE, PLUMAS NATIONAL FOREST

WALKER MINE TAILINGS, PLUMAS COUNTY

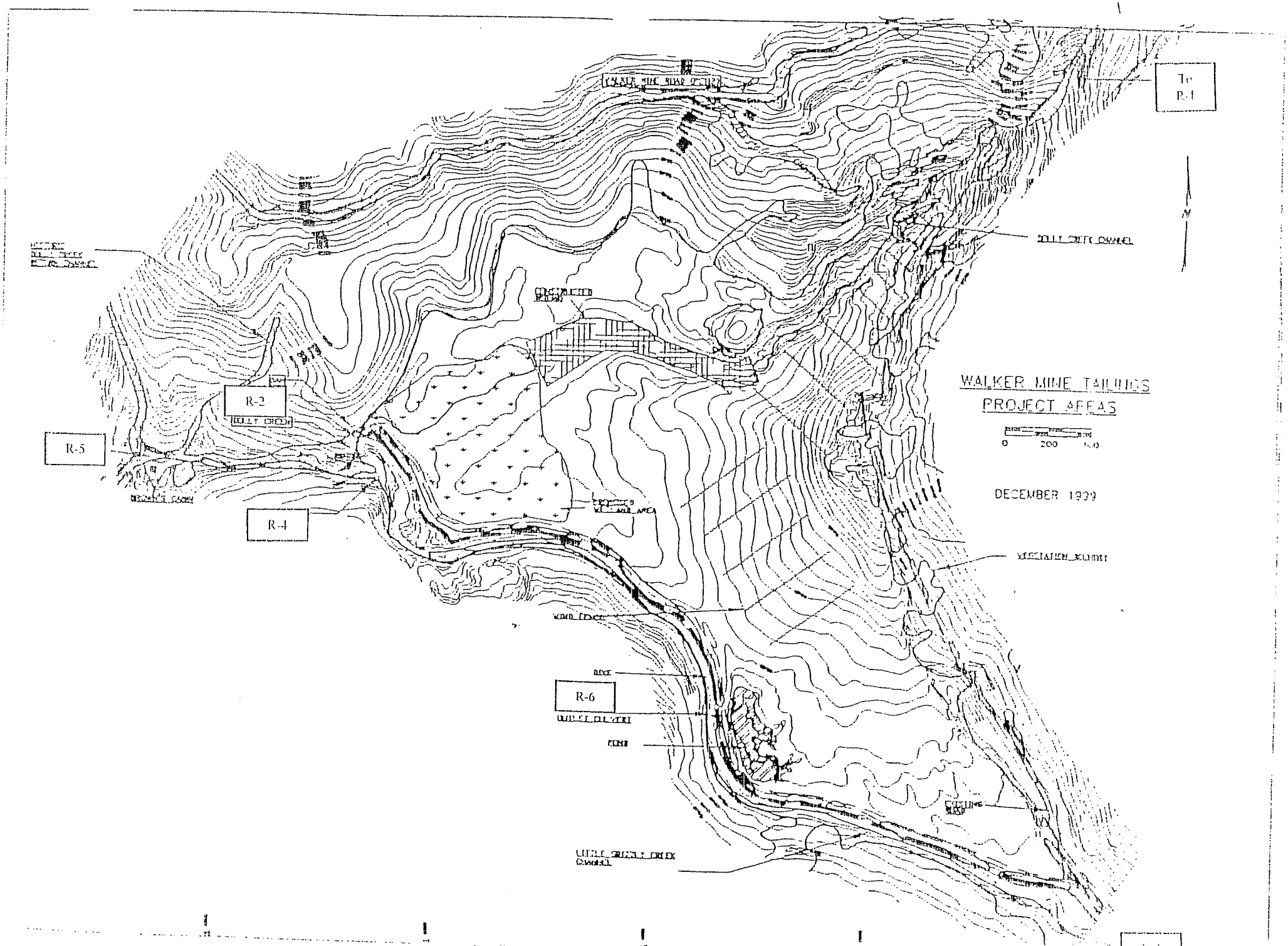
Jul-10

CONSTITUENT	UNITS	DETECTION LIMITS	R-1	R-2	R-3[1]	R-4	R-5[2]	R-6	Limitation @R-5[3]
Field Parameters									
Flow	cfs		1.01	0.13	7.34	9.89	8.80	0	N/A
pH	number		8.19	8.14	8.09	8.1	8.44	N/A	N/A
Specific Conductance	umhos/cm		76	176	42	45	113	N/A	N/A
Air Temperature	℉		63	59	64	64	61	N/A	N/A
Water Temperature	℃		12.1	15.7	11.5	9.4	10.3	N/A	N/A
Laboratory									
Total Hardness as CaCO3	mg/l	5	49	92	23	28	27	N/A	N/A
Total Alkalinity as CaCO3	mg/l	1	56	42	33	36	35	N/A	N/A
Sulfate	mg/l	0.5	NA	62	NA	NA	NA	N/A	N/A
Turbidity	NTU	0.05	0.78	0.75	0.3	0.34	0.35	N/A	NOT MEASURED
Dissolved Iron	ug/l	20	NA	NA	NA	0.07	0.074	N/A	1000
Copper	ug/l	0.5	NA	NA	NA	NA	NA	N/A	0.00
Dissolved Zinc	ug/l	1.0	NA	0.072	NA	NA	NA	N/A	0.00

[1] R-3 is the background station located above the tailiings area on Little Grizzly Creek.

[2] R-5 is the compliance station located near Brown's Cabin, downstream from the confluence of Dolly Creek with Little Grizzly Creek.

[3] The compliance values for copper and zinc are calculated with the R-5 hardness value of 27 mg/l as CaCO3.


To R-1
R-2
R-4
R-5
R-6
WALKER MINE TAILINGS
PROJECT AREAS
0
200
DECEMBER 1999

WALKER MINE TAILINGS MONITORING PROGRAM

9-275a
(May 1971)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. _____
Comp. by _____
Checked by _____

Sta. No. R-5

Little Grizzly Creek @ Brown's Cabin

Date 6/21, 2010 Party Flynn

Width _____ Area _____ Vel. _____ G. H. _____ Disch. _____

Method 6/10 No. secs. _____, G. H. change _____ in _____ hrs. Susp. _____

Method coef. _____ Hor. angle coef. _____ Susp. coef. _____ Meter No. _____

Type of meter Marsh McBirney

Date rated _____ for rod, other.

Meter _____ ft. above bottom of weight.

Spin before meas. _____ after _____

Meas. plots ____ % diff. from rating _____

Wading, cable, ice, boat, upstr., downstr., side bridge _____ feet, mile, above, below gage, and _____

Check-bar, found _____ changed to _____ at _____

Correct _____

Levels obtained _____

GAGE READINGS

Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%); based on following conditions: Cross section _____

Flow _____

Other _____

Gage _____ Record removed _____

Observer _____

Control _____

Weather Warm / Clear

Air 63° F @ 1423

Water 12.1 °C @ 1426

Intake flushed _____

pH 8.22

CONDUCTANCE 48 umhos/cm

G. H. of zero flow _____ ft.

Samples @ 1420

River at—

Angle coef. factor	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge
LB	2.1										
	3		.25				.36				
	4		.3				1.30				
	5		.95				1.67				
	6		.8				2.08				
	7		1.3				2.24				
	8		1.5				2.66				
	9		1.45				1.97				
	10		.7				1.89				
	11		.8				1.04				
	12		.85				.34				
	13		.6				.87				
	14		.55				1.79				
	15		.15				1.07				
⊖	16		.05				⊖				
RB	16.3										

9-275-1
(May 1971)

WALKE INE TAILINGS MONITORING PROGRAM

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. .....
Comp. by .....
Checked by .....

Sta. No. R-1

Dolly Creek above Tailings @ Road 112

Date 6/21, 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

GAGE READINGS				
Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Type of meter Marsh McBirney

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots .... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow ..... Weather Warm/Clear

Other ..... Air 63°F @ 1352

Gage ..... Water 12.5 °C @ 1350

..... Record removed ..... Intake flushed "

Observer .....

Control .....

pH 8.19

CONDUCTANCE 76 umhos/cm

G. H. of zero flow ..... ft.

Samples @ 1348

River at—

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge
LB	.95										
	1.5		.7				0				
	2		.8				0				
	2.5		.8				0				
	3		.9				0				
	3.5		.85				.04				
	4		1.10				.37				
	4.5		.9				.77				
	5		.9				2.26				
	5.5		0.75				1.17				
	6		.70				0				
	6.5		.2				0				
RB	6.7										

WALK MINE TAILINGS MONITORING PROGRAM

9-2765
(May 1971)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

Meas. No. .....

Comp. by .....

Checked by .....

DISCHARGE MEASUREMENT NOTES

Sta. No. R-3

Little Grizzly Creek above Tailings

Date 6/21, 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

Type of meter Marsh McBirney

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots ..... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side

bridge ..... feet, mile, above, below

gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

GAGE READINGS

Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow .....

Weather Warm/Clear

Other .....

Air 64 °F @ 1312

Gage .....

Water 11.5 °C @ 1314

..... Record removed ..... Intake flushed U .....

Observer .....

Control .....

pH 8.09

CONDUCTANCE 42 umhos/cm

G. H. of zero flow ..... ft.

Samples @ 1310

River at—

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge
LB	1.6										
	2		.1				.36				
	3		.45				2.08				
	4		.4				4.47				
	5		.6				1.79				
	6		.7				3.81				
	7		1.0				3.27				
	8		.8				2.92				
	9		.65				2.63				
	10		.8				1.10				
	11		.5				0				
RB	11.15										

WALKER MINE TAILINGS MONITORING PROGRAM

9-276-P
(May 1971)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. .....

Comp. by .....

Checked by .....

Sta. No. R-4

Little Grizzly Creek below Tailings

Date 6/21, 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

Type of meter Marsh McBirney

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots .... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

GAGE READINGS

Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow .....

Other .....

Gage .....

Record removed .....

Observer .....

Control .....

pH 8.10

CONDUCTANCE 45 umhos/cm

G. H. of zero flow ..... ft.

Samples @ 1216

River at—

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge
LB	1.4										
	2		.10				.11				
	3		.35				.44				
	4		.80				.80				
	5		1.00				1.12				
	6		1.10				1.69				
	7		1.15				1.22				
	8		1.05				2.39				
	9		1.10				2.51				
	10		0.85				2.90				
	11		1.10				2.50				
	12		.80				2.35				
	13		.75				2.11				
	14		1.00				0.63				
RB	14.8										

9-2767
(May 1971)

WALKINE TAILINGS MONITORING PROGRAM

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. .....
Comp. by .....
Checked by .....

Sta. No. R-2
Dolly Creek below Tailings Dam

Date 6/21, 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

Type of meter Marsh McBirney

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots .... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....
changed to ..... at .....

Correct .....

Levels obtained .....

GAGE READINGS

Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow ..... Weather Warm / Clear

Other ..... Air 59° F @ 1133

Gage ..... Water 15.7 °C @ 1135

..... Record removed ..... Intake flushed .....

Observer .....

Control .....

pH 8.14

CONDUCTANCE 176 umhos/cm

G. H. of zero flow ..... ft.

Samples @ 1128

River at—

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge
LB	0.25										
	.5		.05				0				
	1		.20				0				
	1.5		.15				0				
	2		.15				.03				
	2.5		.40				.20				
	3		.30				.07				
	3.5		.10				0				
RB	3.95										

.0 .10 .20 .30 .40 .50 .60 .70 .80 .90 1.00

9-275-F
(May 1971)

WALKF INE TAILINGS MONITORING PROGRAM

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. .....

Comp. by .....

Checked by .....

Sta. No. R-6

Sediment Basin Outlet

Date 6/21, 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method ..... No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

GAGE READINGS

Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Type of meter .....

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots .... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow (No Flow) Weather .....

Other ..... Air ..... °C@ .....

Gage ..... Water ..... °C@ .....

..... Record removed ..... Intake flushed .....

Observer .....

Control .....

pH .....

CONDUCTANCE ..... umhos/cm

G. H. of zero flow ..... ft.

River at—

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge

No Flow!

.0 .10 .20 .30 .40 .50 .60 .70 .75

BSK ANALYTICAL LABORATORIES

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(559) 497-2888 • FAX (559) 497-2893 • www.bsklabs.com

A0F1873
USDAF3671
06/24/2010

* Required Fields

TEMP. 11

Client/Company Name *:	Report Attention *:	Phone * #: 530-283-7712 FAX * #:
USDA Forest Service Plumas National Forest	Ryan Nupen	E-mail: rnupen@fs.fed.us

Address *: 159 Lawrence St. City *: Quincy State *: CA Zip *: 95971

Project Information: Walker Mine Tailings

PO #

Quote #

How would you like your completed results sent? ☐ E-Mail ☐ Fax ☐ EDD ☐ Mail Only

Sampler Name Printed / Signature: Pat Flynn / Pat F

QC Request: ☑ STD ☐ Level II

Result Request ** Surcharge: ☑ STD ☐ 5 Day** ☐ 2 Day** ☐ 1 Day**

Carbon Copies: (Circle One) CDHS ☐ Fresno Co ☐ EPA ☐ Merced Co ☐ Tulare Co ☐ Other:

Regulatory Compliance: Electronic Data Transfer: ☐ Y ☐ N System No. *

Matrix Types: RSW = Raw Surface Water, RGW = Raw Ground Water, CFW = Clorinated Finished Water, FW = Finished Water, CWW = Chorinated Waste Water, WW = Waste Water, BW = Bottled Water, SW = Storm Water, DW = Drinking Water, SO = Solid

ANALYSIS REQUESTED

Sample #	# Bottles	Sampled Date	Sampled Time	Sample Description / Location *	Matrix *	Comments / Station Code	Sulfate	Alkalinity	Hardness	Fe, Cu, Zn (Filtration)	Turbidity				
1	1	6/21	[redacted]	W-3 (1038 hrs) - Time	RGW		✓	✓	✓	✓					
2	1		[redacted]	W-5 (0938 hrs) - Time	RGW		✓	✓	✓	✓					
3	1		0800	W-7	RGW		✓	✓	✓	✓					
4	1		1348	R-1	RSW		✓	✓	✓	✓	✓				
5	1		1128	R-2	RSW		✓	✓	✓	✓	✓				
6	1		1310	R-3	RSW		✓	✓	✓	✓	✓				
7	1		1216	R-4	RSW		✓	✓	✓	✓	✓				
8	1		1420	R-5	RSW		✓	✓	✓	✓	✓				

Relinquished by: (Signature and Printed Name)	Company	Date	Time	Received by (Signature and Print Name)	Company
Pat F / Pat Flynn	Sierra Environmental	6/22/10	0745	[signature] / Ryan Nupen	USDA Forest Service
[signature] / Ryan Nupen	USDA Forest Service	6/22/10	0830		

Received for Lab by: (Signature and Printed Name): [signature] Date: 6/24/10 Time: 1400

Payment Received at Delivery: Date: Amount: Check/Cash/Card PIA # Init.

Shipping Method: CAO UPS GSO WALK-IN SJVC FED EX OTHER

Cooling Method: WET BLUE NONE

Packing Material: BW

Notice: Payment for services rendered as noted herein are due in full within 30 days from when invoiced. If not so paid, account balances are deemed delinquent. Delinquent balances are subject to monthly service/re-billing charges and interest calculated at 1 1/2 % per month, 18% per annum. BSK & Associates shall be entitled to recover on delinquent accounts, costs of collections, including attorneys' fees incurred prior to or in litigation whether concluded by judgement, settlement, compromise or otherwise. The person signing for the client/Company expressley acknowledges that they are either the Client or authorized agent to the Client, and the Client agrees to be responsible for payment for analytical services on this Chain of Custody. Any modification of the analysis requested, either type or quantities, will be noted and agreed upon this Chain of Custody. The turn around time for any samples received after 3:00 pm will begin the next business day.

BS-FI-0019-01/06/2010

Table 2. GROUND WATER SUMMARY

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE, PLUMAS NATIONAL FOREST

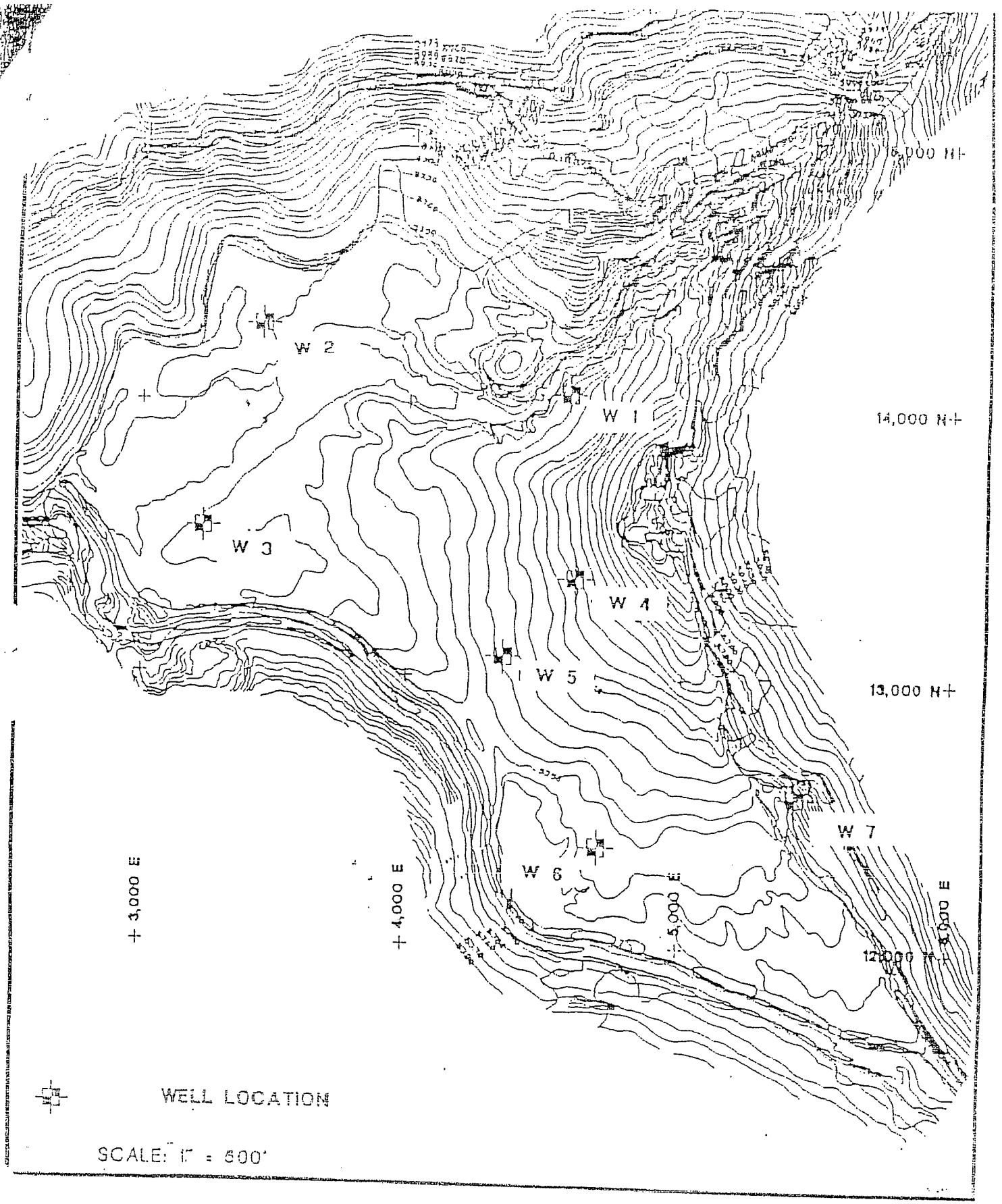
WALKER MINE TAILINGS, PLUMAS COUNTY

June 2010

CONSTITUENT	UNIT	DETECTION LIMIT	WELL SITES W-1	W-2	W-3	W-4	W-5	W-6	W-7*
Field Parameters									
Ground Surface Elevation	ft	0.01	N/A	5742.05	5739.15	5768.27	5754.28	5748.04	5753.85
Top of Cap Elevation	ft	0.01	N/A	5741.74	5738.83	5768.00	5754.09	5747.87	5754.91
Depth to Water	ft	0.01	N/A	1.17	4.61	17.73	7.38	4.63	0.75
Water Surface Elevation	ft	0.01	N/A	5740.57	5734.22	5750.27	5746.71	5743.24	5754.16
Laboratory									
Total Hardness as $CaCO_3$	mg/l	5.0	N/A	N/A	190.0	N/A	160.0	N/A	30.0
Total Alkalinity	mg/l	1.0	N/A	N/A	130.0	N/A	51.0	N/A	48.0
Sulfate	mg/l	0.5	N/A	N/A	75.0	N/A	140.0	N/A	N/A
Dissolved Iron	ug/l	20.0	N/A	N/A	N/A	N/A	1.1	N/A	N/A
Dissolved Copper	ug/l	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc	ug/l	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*W-7 is located upgradient and off-site in a wet area. The data collected from this well are used for background comparisons.

[1] ND is not detected at or above the detection limit



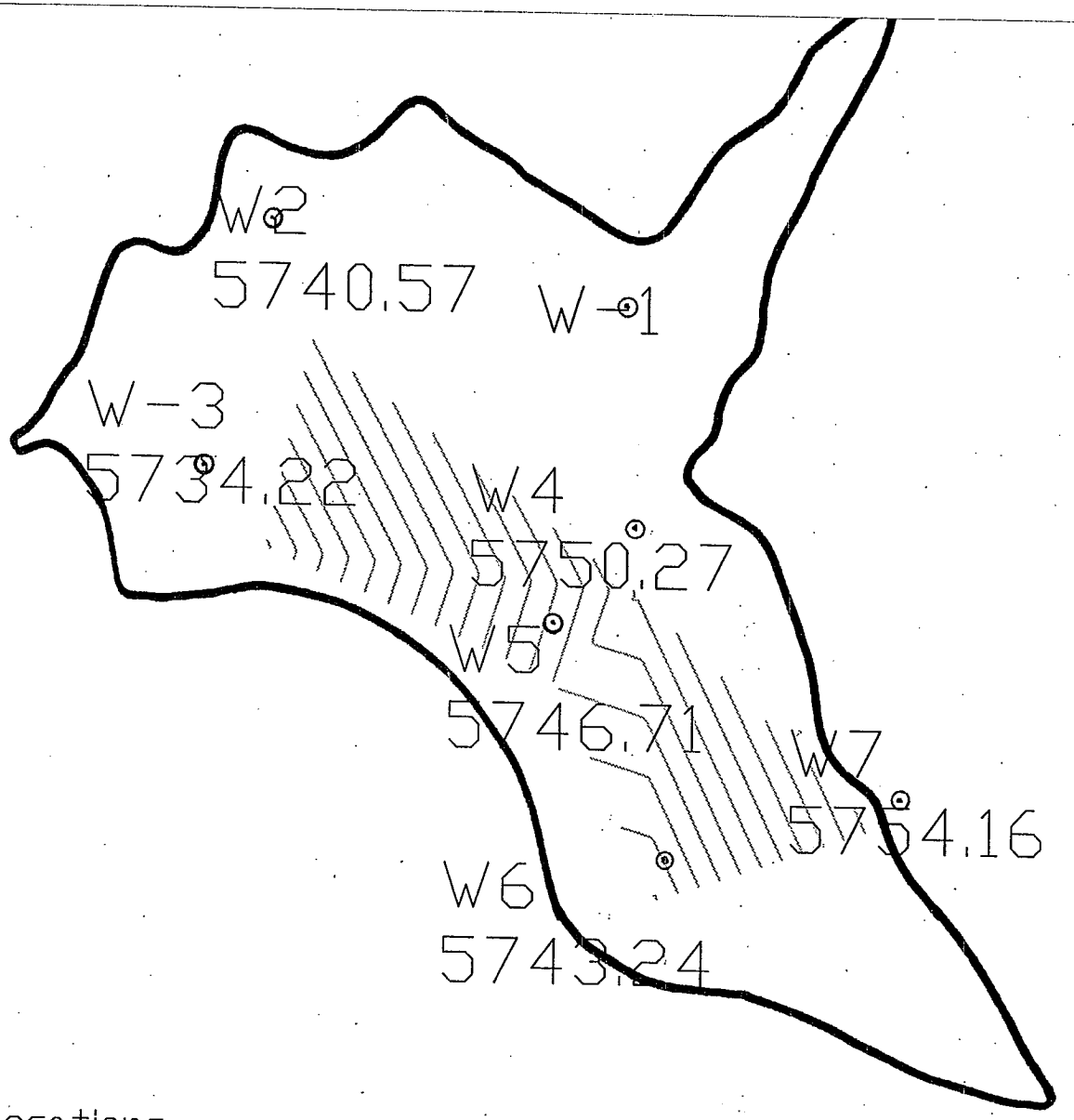
WALKER MINE TAILINGS

WALKER TAILINGS
GROUNDWATER MONITORING PROGRAM

FLUID LEVEL GAUGING

SITE LOCATION: Walker Mine DATE: 6/21/10
COMPANY NAME: Sierra Environmental
PERSONNEL: Flynn

WELL	TIME	DEPTH TO WATER	COMMENTS
W-1A	0853	8.38	
2	1054	1.17	
3	0958	4.61	
4	0949	17.73	
5	0900	7.38	
6	0839	4.63	
7	0737	0.75	



Well Locations
Groundwater Elevation Isopleths

Walker Mine Tailings
Groundwater Contour Map

May 2010

Water-Quality Sampling Information

Project Number: _____

Page 1 of 1

Project Name: Walker Mine Tailings

Date: 6/21/10

Project Location: Walker Mine

Day: (M) T W Th F S S

Site Conditions/Weather: Damp / Very Cool - Mostly Clear

Staff: Flynn

Comments : _____

SAMPLING METHOD

- [ ] Centrifugal Pump
- [ ] Submersible Pump
- [ ] Hand Bail
- [x] Disposable Bailer
- [ ] Teflon Bailer
- [ ] _____ (other)

Sample Number: W-7

- [ ] FB: _____
- [ ] DUP: _____

Analysis Requested

Fe, Cu, Zn
Hardness, Alk, SO_4

Number and Types of Bottle Used

_____

Method of shipment

BSK
(lab name)

- [ ] Courier
- [x] Hand Deliver

Calculation Area

Height of water column =
Depth to water =

80% DTW _____

Well Number: W-7
Depth of Water: 0.75
Well Depth: 11.00
Height of Water Column: 10.25
Volume in Well: (gallons) 1.64
3 Well Volumes: (gallons) 4.92

Well Diameter: 2"

- [x] 2" (0.16 gallon / feet)
- [ ] 4" (0.65 gallon/ feet)
- [ ] 5" (1.02 gallon/ feet)
- [ ] 6" (1.47 gallon/ feet)

Time	Depth to Water	Volume Purged (gallons)	Totalizer Reading	Temperature °F °C	pH	Cond. ms/ cm	Turbidity (NTU)	Remarks
0738								Start Purge
0742		1.75		6.5	6.31	0	7.1	Low Tb / Nonda
0748		3.5		5.4	6.32	0	47.3	Mod Tb / " "
0755		5.25		5.2	6.25	0	115.7	" " " "
0800							20.3	Sample W-7

Inlet Depth: _____

_____ Signed: _____ Date: _____

Water-Quality Sampling Information

Project Number: _____

Page 1 of 1

Project Name: Walker Mine Tailings

Date: 6/21/10

roject Location: Walker Mine

Day: (M) T W Th F S S

Site Conditions/Weather: Damp / Cool - Clear

Staff: Flynn

Comments : _____

SAMPLING METHOD

- [ ] Centrifugal Pump
- [ ] Submersible Pump
- [ ] Hand Bail
- [x] Disposable Bailer
- [ ] Teflon Bailer
- [ ] _____ (other)

Sample Number: W-5

- [ ] FB: _____
- [ ] DUP: _____

Analysis Requested

Fe, Cu, Zn
Hardness, Alk, SO_4

Number and Types of Bottle Used

Method of shipment

BSK
(lab name)

- [ ] Courier
- [x] Hand Deliver

Calculation Area

Height of water column =
Depth to water =

80% DTW _____

`Vell Number: W-5
epth of Water: 7.38
Well Depth: 40.30
Height of Water Column: 32.92
Volume in Well: (gallons) 5.27
3 Well Volumes: (gallons) 15.80

Well Diameter: 2"

- [x] 2" (0.16 gallon / feet)
- [ ] 4" (0.65 gallon/ feet)
- [ ] 5" (1.02 gallon/ feet)
- [ ] 6" (1.47 gallon/ feet)

Time	Depth to Water	Volume Purged (gallons)	Totalizer Reading	Temperature °F °C	pH	Cond. ms/ cm	Turbidity (NTU)	Remarks
0904								Start Purge
0914		6		8.2	6.92	297	12.1	Low Tb / No odor
0924		12		8.3	7.16	301	9.2	" "
0935		18		8.5	7.18	304	8.7	" "
0938								Sample W-5

Inlet Depth: _____

_____ Signed: _____ Date: _____

Water-Quality Sampling Information

Project Number: _____

Project Name: Walker Mine Tailings

Project Location: Walker Mine

Site Conditions/Weather: Damp / Cool - Clear

Page 1 of 1

Date: 6/21/10.

Day: (M) T W Th F S S

Staff: Flynn

Comments : _____

SAMPLING METHOD

- [ ] Centrifugal Pump
- [ ] Submersible Pump
- [ ] Hand Bail
- [x] Disposable Bailer
- [ ] Teflon Bailer
- [ ] _____ (other)

Sample Number: W-3

- [ ] FB: _____
- [ ] DUP: _____

Analysis Requested

Fe, Cu, Zn
Hardness, Alk, SO_4

Number and Types of Bottle Used

_____

Method of shipment

BSK
(lab name)

- [ ] Courier
- [x] Hand Deliver

Calculation Area

Height of water column =
Depth to water =

80% DTW _____

Well Number: W-3
Depth of Water: 4.61
Well Depth: 34.25
Height of Water Column: 29.64
Volume in Well: (gallons) 4.74
3 Well Volumes: (gallons) 14.22

Well Diameter: 2"

- [x] 2" (0.16 gallon / feet)
- [ ] 4" (0.65 gallon/ feet)
- [ ] 5" (1.02 gallon/ feet)
- [ ] 6" (1.47 gallon/ feet)

Time	Depth to Water	Volume Purged (gallons)	Totalizer Reading	Temperature °C	pH	Cond. ms/ cm	Turbidity (NTU)	Remarks
1004								Start Purge
1013		5		10.4	7.95	292	17.9	Low Tb / No odor
1023		10		9.8	8.20	282	13.1	" "
1034		15		10.0	8.19	286	9.1	" "
1038								Sample W-3

Inlet Depth: _____

_____ Signed: _____ Date: _____

BSK Analytical Laboratories
Engineers & Laboratories

A0F1873
07/10/2010

Ryan Nupen
USDA Forest Service
159 Lawrence Street
Quincy, CA 95971

Dear Ryan Nupen,

Thank you for selecting BSK Analytical Laboratories for your analytical testing needs. We have prepared this report in response to your request for analytical services. Enclosed are the results of analyses for samples received by the laboratory on 06/24/2010 10:00.

If additional clarification of any information is required, please contact your Client Services Representative, Mamie Zamora at (800) 877-8310 or (559) 497-2888.

BSK ANALYTICAL LABORATORIES

Mamie J Zamora

Mamie Zamora
Client Services Representative

1414 Stanislaus Street Fresno, CA 93706 (559) 497-2888 FAX (559) 485-6935 www.bsklabs.com
An Employee-Owned Company | Analytical Testing | Construction Observation
Environmental Engineering | Geotechnical Engineering | Materials Testing

BSK Analytical Laboratories
Engineers & Laboratories

07/10/2010

Case Narrative

Work Order Information

Client Name: USDA Forest Service
Client Code: USDAF3671
Work Order: A0F1873
Project: Walker Mine

Submitted by: Ryan Nupen
Shipped by: Fed Ex
COC Number:
TAT: 10
PO #:

Sample Receipt Conditions

Cooler: **Default Cooler**

Temp. °C: 11

Containers Intact
COC/Labels Agree
Received On Blue Ice
Packing Material - Bubble Wrap
Initial receipt at BSK-FAL

Report Manager
Ryan Nupen

Report Format
FAL Final Report.rpt

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(559) 497-2888 • FAX (559) 497-2893 • w ıabs.com

ANALYTICAL

* Required Fields

TEMP: _____

Client/Company Name *:	Report Attention *:	Phone * #: 530-283-7712 FAX * #:
USDA Forest Service Plumas National Forest	Ryan Nupen	E-mail: mupen@fs.fed.us

Address *	City *	State *	Zip *
159 Lawrence St.	Quincy	CA	95971

Project Information: Walker Mine Tailings

PO #

Quote #

How would you like your completed results sent? ☐ E-Mail ☐ Fax ☐ EDD ☐ Mail Only

Sampler Name Printed / Signature: Pat Flynn / Pat F

QC Request: ☑ STD ☐ Level II

Result Request ** Surcharge: ☑ STD ☐ 5 Day** ☐ 2 Day** ☐ 1 Day**

Carbon Copies: (Circle One)
CDHS ☐ Fresno Co ☐ EPA ☐
Merced Co ☐ Tulare Co ☐
Other:

Regulatory Compliance
Electronic Data Transfer: ☐ Y ☐ N
System No. *

ANALYSIS REQUESTED

Matrix Types: RSW = Raw Surface Water, CFW = Clorinated Finished Water, CWW = Chorinated Waste Water, BW = Bottled Water, RGW = Raw Ground Water, FW = Finished Water, WW = Waste Water, SW = Storm Water, DW = Drinking Water, SO = Solid

Sample #	# Bottles	Sampled Date	Sampled Time	Sample Description / Location *	Matrix *	Comments / Station Code	Sulfate	Alkalinity	Hardness	Fe, Cu, Zn (Filtration)					
	1	6/21	[redacted]	W-3 (1038 hrs) - Time	RGW		✓	✓	✓	✓					
	1	↓	[redacted]	W-5 (0938 hrs) - Time	RGW		✓	✓	✓	✓					
	1	↓	0800	W-7	RGW		✓	✓	✓	✓					
	1	↓	1348	R-1	RSW		✓	✓	✓	✓					
	1	↓	1128	R-2	RSW		✓	✓	✓	✓					
	1	↓	1310	R-3	RSW		✓	✓	✓	✓					
	1	↓	1216	R-4	RSW		✓	✓	✓	✓					
	1	↓	1420	R-5	RSW		✓	✓	✓	✓					

Relinquished by: (Signature and Printed Name)	Company	Date	Time	Received by (Signature and Print Name)	Company
Pat F / Pat Flynn	Sierra Environmental	6/22/10	0745	Ryan Nupen / Ryan Nupen	USDA Forest Service
Ryan Nupen / Ryan Nupen	USDA Forest Service	6/22/10	0830		

Received for Lab by: (Signature and Printed Name)	Date	Time

Payment Received at Delivery:
Date: Amount: Check/Cash/Card PIA # Init.

Shipping Method: CAO UPS GSO WALK-IN SJVC FED EX OTHER

Cooling Method: WET BLUE NONE

Packing Material:

Notice: Payment for services rendered as noted herein are due in full within 30 days from when invoiced. If not so paid, account balances are deemed delinquent. Delinquent balances are subject to monthly service/re-billing charges and interest calculated at 1 1/2 % per month, 18% per annum. BSK & Associates shall be entitled to recover on delinquent accounts, costs of collections, including attorneys' fees incurred prior to or in litigation whether concluded by judgement, settlement, compromise or otherwise. The person signing for the client/Company expressley acknowledges that they are either the Client or authorized agent to the Client, and the Client agrees to be responsible for payment for analytical services on this Chain of Custody. Any modification of the analysis requested, either type or quantities, will be noted and agreed upon this Chain of Custody. The turn around time for any samples received after 3:00 pm will begin the next business day.

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159 Lawrence Street
Quincy, CA 95971

Report Issue Date: 07/10/2010 9:54
Received Date: 06/24/2010
Received Time: 10:00

Lab Sample ID: A0F1873-04
Sample Date: 06/21/2010 13:48
Sampled by: Pat Flynn
Sample Type: Grab
Matrix: Ground Water
Sample Control Qualifiers: HT01, SC02
Sample Description: R-1

General Chemistry

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Alkalinity as CaCO3	SM 2320 B	**56**	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Bicarbonate as CaCO3	SM 2320 B	**56**	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Carbonate as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Hydroxide as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Sulfate as SO4	EPA 300.0	ND	2.0	mg/L	1	A005048	06/25/10	06/25/10	
Turbidity	SM 2130 B	**0.78**	0.10	NTU	1	A005051	06/24/10 18:03	06/24/10 18:03	HT01

Metals

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Calcium	EPA 200.7	**11**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Copper - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Hardness as CaCO3	SM 2340B	**49**		mg/L					
Iron - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Magnesium	EPA 200.7	**5.2**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Zinc - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	

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Report Issue Date: 07/10/2010 9:54
Received Date: 06/24/2010
Received Time: 10:00

Lab Sample ID: A0F1873-05
Sample Date: 06/21/2010 11:28
Sample Type: Grab
Sample Control Qualifiers: HT01, SC02
Sample Description: R-2

Sampled by: Pat Flynn
Matrix: Ground Water

General Chemistry

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Alkalinity as CaCO3	SM 2320 B	**42**	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Bicarbonate as CaCO3	SM 2320 B	**42**	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Carbonate as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Hydroxide as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Sulfate as SO4	EPA 300.0	**62**	2.0	mg/L	1	A005048	06/25/10	06/25/10	
Turbidity	SM 2130 B	**0.75**	0.10	NTU	1	A005051	06/24/10 18:04	06/24/10 18:04	HT01

Metals

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Calcium	EPA 200.7	**29**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Copper - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Hardness as CaCO3	SM 2340B	**92**		mg/L					
Iron - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Magnesium	EPA 200.7	**4.6**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Zinc - Dissolved (1)	EPA 200.7	**0.072**	0.050	mg/L	1	A005430	07/06/10	07/07/10	

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Report Issue Date: 07/10/2010 9:54
Received Date: 06/24/2010
Received Time: 10:00

Lab Sample ID: A0F1873-06
Sample Date: 06/21/2010 13:10
Sample Type: Grab
Sample Control Qualifiers: HT01, SC02
Sample Description: R-3

Sampled by: Pat Flynn
Matrix: Ground Water

General Chemistry

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Alkalinity as CaCO3	SM 2320 B	**33**	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Bicarbonate as CaCO3	SM 2320 B	**33**	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Carbonate as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Hydroxide as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Sulfate as SO4	EPA 300.0	ND	2.0	mg/L	1	A005048	06/25/10	06/25/10	
Turbidity	SM 2130 B	**0.30**	0.10	NTU	1	A005069	06/24/10 18:30	06/24/10 18:30	HT01

Metals

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Calcium	EPA 200.7	**5.9**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Copper - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Hardness as CaCO3	SM 2340B	**23**		mg/L					
Iron - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Magnesium	EPA 200.7	**2.0**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Zinc - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	

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Report Issue Date: 07/10/2010 9:54
Received Date: 06/24/2010
Received Time: 10:00

Lab Sample ID: A0F1873-07
Sample Date: 06/21/2010 12:13
Sample Type: Grab
Sample Control Qualifiers: HT01, SC02
Sample Description: R-4

Sampled by: Pat Flynn
Matrix: Ground Water

General Chemistry

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Alkalinity as CaCO3	SM 2320 B	**36**	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Bicarbonate as CaCO3	SM 2320 B	**36**	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Carbonate as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Hydroxide as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Sulfate as SO4	EPA 300.0	ND	2.0	mg/L	1	A005048	06/25/10	06/25/10	
Turbidity	SM 2130 B	**0.34**	0.10	NTU	1	A005069	06/24/10 18:31	06/24/10 18:31	HT01

Metals

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Calcium	EPA 200.7	**7.1**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Copper - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Hardness as CaCO3	SM 2340B	**28**		mg/L					
Iron - Dissolved (1)	EPA 200.7	**0.070**	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Magnesium	EPA 200.7	**2.4**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Zinc - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	

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Report Issue Date: 07/10/2010 9:54
Received Date: 06/24/2010
Received Time: 10:00

Lab Sample ID: A0F1873-08
Sample Date: 06/21/2010 14:20
Sample Type: Grab
Sample Control Qualifiers: HT01, SC02
Sample Description: R-5

Sampled by: Pat Flynn
Matrix: Ground Water

General Chemistry

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Alkalinity as CaCO3	SM 2320 B	**35**	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Bicarbonate as CaCO3	SM 2320 B	**35**	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Carbonate as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Hydroxide as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/25/10	06/25/10	
Sulfate as SO4	EPA 300.0	ND	2.0	mg/L	1	A005048	06/25/10	06/25/10	
Turbidity	SM 2130 B	**0.35**	0.10	NTU	1	A005069	06/24/10 18:32	06/24/10 18:32	HT01

Metals

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Calcium	EPA 200.7	**6.9**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Copper - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Hardness as CaCO3	SM 2340B	**27**		mg/L					
Iron - Dissolved (1)	EPA 200.7	**0.074**	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Magnesium	EPA 200.7	**2.3**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Zinc - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	

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Report Issue Date: 07/10/2010 9:54
Received Date: 06/24/2010
Received Time: 10:00

Lab Sample ID: A0F1873-01
Sample Date: 06/21/2010 10:38
Sample Type: Grab
Sample Control Qualifiers: HT01, SC02
Sample Description: W-3

Sampled by: Pat Flynn
Matrix: Ground Water

General Chemistry

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Alkalinity as CaCO3	SM 2320 B	**130**	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Bicarbonate as CaCO3	SM 2320 B	**130**	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Carbonate as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Hydroxide as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Sulfate as SO4	EPA 300.0	**75**	4.0	mg/L	2	A005084	06/25/10	06/25/10	

Metals

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Calcium	EPA 200.7	**66**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Copper - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Hardness as CaCO3	SM 2340B	**190**		mg/L					
Iron - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Magnesium	EPA 200.7	**7.0**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Zinc - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	

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Report Issue Date: 07/10/2010 9:54
Received Date: 06/24/2010
Received Time: 10:00

Lab Sample ID: A0F1873-02
Sample Date: 06/21/2010 09:38
Sample Type: Grab
Sample Control Qualifiers: HT01, SC02
Sample Description: W-5

Sampled by: Pat Flynn
Matrix: Ground Water

General Chemistry

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Alkalinity as CaCO3	SM 2320 B	**51**	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Bicarbonate as CaCO3	SM 2320 B	**51**	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Carbonate as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Hydroxide as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Sulfate as SO4	EPA 300.0	**140**	4.0	mg/L	2	A005084	06/25/10	06/25/10	

Metals

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Calcium	EPA 200.7	**60**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Copper - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Hardness as CaCO3	SM 2340B	**160**		mg/L					
Iron - Dissolved (1)	EPA 200.7	**1.1**	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Magnesium	EPA 200.7	**3.3**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Zinc - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	

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Report Issue Date: 07/10/2010 9:54
Received Date: 06/24/2010
Received Time: 10:00

Lab Sample ID: A0F1873-03
Sample Date: 06/21/2010 08:00
Sample Type: Grab
Sample Control Qualifiers: HT01, SC02
Sample Description: W-7

Sampled by: Pat Flynn
Matrix: Ground Water

General Chemistry

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Alkalinity as CaCO3	SM 2320 B	**48**	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Bicarbonate as CaCO3	SM 2320 B	**48**	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Carbonate as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Hydroxide as CaCO3	SM 2320 B	ND	3.0	mg/L	1	A005046	06/24/10	06/24/10	
Sulfate as SO4	EPA 300.0	ND	2.0	mg/L	1	A005048	06/25/10	06/25/10	

Metals

Analyte	Method	Result	RL	Units	Dil.	Batch	Prepared	Analyzed	Qualifiers
Calcium	EPA 200.7	**8.5**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Copper - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Hardness as CaCO3	SM 2340B	**30**		mg/L					
Iron - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	
Magnesium	EPA 200.7	**2.2**	0.10	mg/L	1	A005340	07/02/10	07/06/10	
Zinc - Dissolved (1)	EPA 200.7	ND	0.050	mg/L	1	A005430	07/06/10	07/07/10	

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August 2010

SURFACE AND GROUNDWATER TEST RESULTS AND SUPORTING DOCUMENTATION

MONITORING REPORT

Discharger: USDA Forest Service, Plumas National Forest

Facility: Walker Mine Tailings, Plumas County

Reporting Frequency: Quarterly

Monitoring Period: August 2010

Findings:

(1) Surface Water. Samples were collected on August 12, 2010. The surface water sample collected at the compliance station, R-5, Little Grizzly Creek near Brown's Cabin, is below copper limitations (see Table 1). The remaining R-5 constituents fall within the prescribed limitations for dissolved iron and zinc. There was no measureable flow at R-2 (tailings dam spillway) which reduced the release of copper from the tailings area to Dolly Creek in August. Concentrations of zinc were detected in all of the four samples taken but none of these concentrations exceeded the limitation of zinc. Concentration of iron were also detected on all four samples of which none exceeded the limitation of 1000 ug/l of the tailings on Dolly Creek.

(2) Groundwater. Samples were not collected on August 12, 2010. Table 2 summarizes the depth of the groundwater from the site.
Groundwater elevations were measured in six of seven wells at the site; W-1 was lost during construction in 2007. Water depths were slightly lower than 2009. With the elevation of the Little Grizzly Creek channel approximately 20 feet below the surface of the tailings area, there is a strong gradient towards little Grizzly Creek all along its course with the tailings area.

Table 1. SURFACE WATER SUMMARY REPORT

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE, PLUMAS NATIONAL FOREST

WALKER MINE TAILINGS, PLUMAS COUNTY

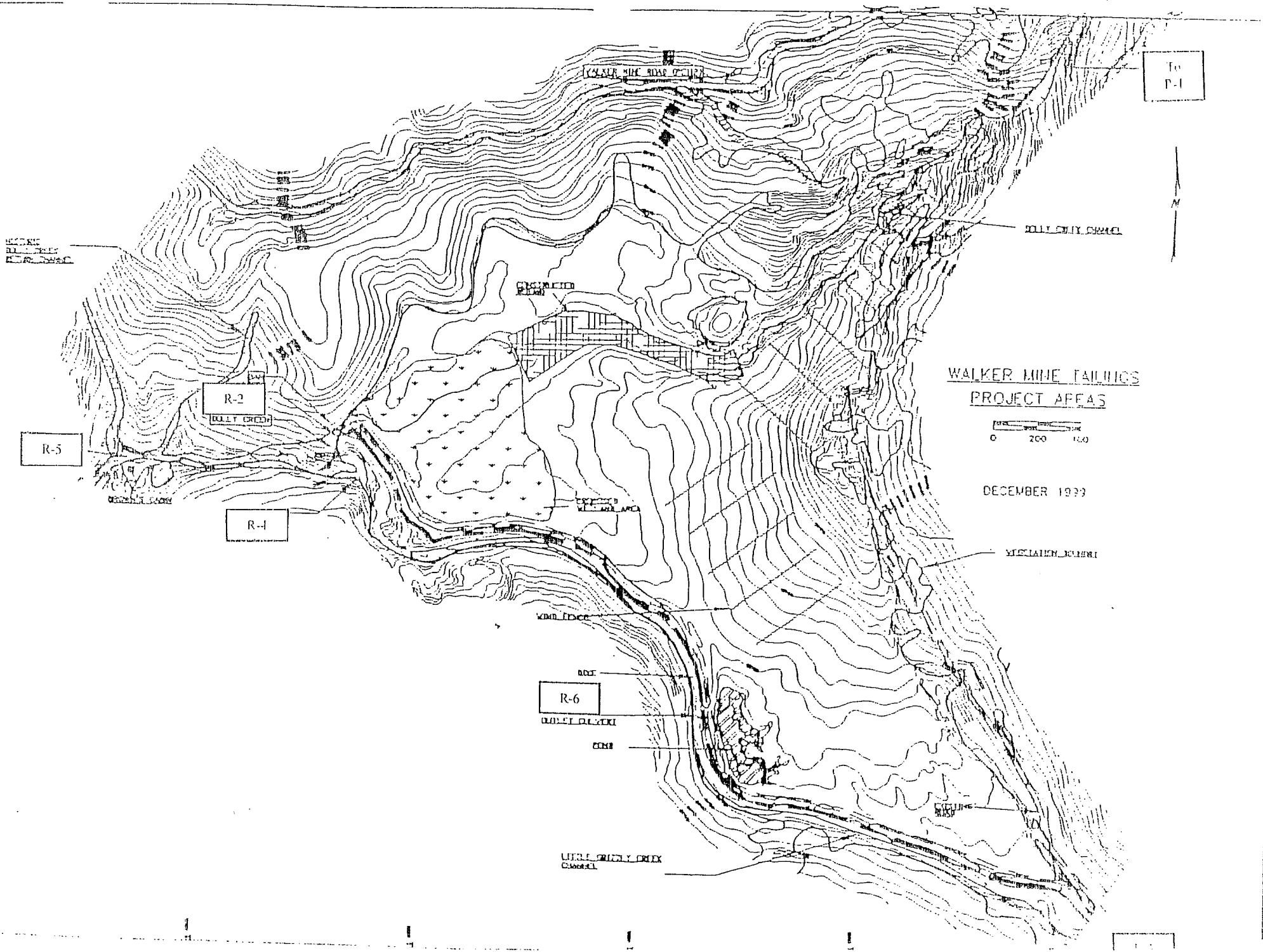
Aug-10

CONSTITUENT	UNITS	DETECTION LIMITS	R-1	R-2	R-3[1]	R-4	R-5[2]	R-6	Limitation @R-5[3]
Field Parameters									
Flow	cfs		0.44	N/A	0.58	0.87	0.93	N/A	N/A
pH	number		8.23	NO FLOW	8	8.1	8.44	N/A	N/A
Specific Conductance	umhos/cm		95.2	NO FLOW	83.8	109	113	N/A	N/A
Air Temperature	℉		64	NO FLOW	62	48	61	N/A	N/A
Water Temperature	℃		7.9	NO FLOW	9.6	8.7	10.3	N/A	N/A
Laboratory									
Total Hardness as CaCO3	mg/l	5	72	NO FLOW	56	75	75	N/A	N/A
Total Alkalinity as CaCO3	mg/l	1	76	NO FLOW	63	75	74	N/A	N/A
Sulfate	mg/l	0.5	0.33	NO FLOW	0.17	7.3	7.4	N/A	N/A
Turbidity	NTU	0.05	NA	NO FLOW	NA	NA	NA	N/A	NOT MEASURED
Dissolved Iron	ug/l	20	0.13	NO FLOW	0.3	0.38	0.35	N/A	1000
Copper	ug/l	0.5	4.3	NO FLOW	0.34	2.7	3.7	N/A	7.00
Dissolved Zinc	ug/l	1.0	4.8	NO FLOW	1.7	4.9	3.7	N/A	92.58

[1] R-3 is the background station located above the tailiings area on Little Grizzly Creek.

[2] R-5 is the compliance station located near Brown's Cabin, downstream from the confluence of Dolly Creek with Little Grizzly Creek.

[3] The compliance values for copper and zinc are calculated with the R-5 hardness value of 75 mg/l as CaCO3.


WALKER MINE TAILINGS
PROJECT AREAS
0 200 400
DECEMBER 1999
To P-1
R-2
R-4
R-5
R-6
DOLLY CREEK
DOLLY CREEK CHANNEL
WALKER MINE ROAD
WIND FENCE
LITTLE GRIZZLY CREEK CHANNEL
N

WALKER MINE TAILINGS MONITORING PROGRAM

9-276-1
(May 1971)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. .....
Comp. by .....
Checked by .....

Sta. No. R-5

Little Grizzly Creek @ Brown's Cabin

Date 8/12 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

GAGE READINGS

Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Type of meter Marsh McBirney

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots ..... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow .....

Weather Warm / Clear

Other .....

Air 61.5 °F @ 1117

Gage .....

Water 10.3 °C @ 1117

..... Record removed ..... Intake flushed .....

Observer .....

Control .....

pH 8.44

CONDUCTANCE 113 umhos/cm

G. H. of zero flow ..... ft.

Samples @ 1110

River st.

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge
LB	1.15										
	1.5		.35				.85				
	2		.6				.92				
	2.5		.55				.25				
	3		.3				.41				
	3.5		.3				.22				
	4		.4				.69				
	4.5		.5				.31				
	5		.35				.15				
	5.5		.6				.20				
	6		.25				.39				
	6.5		.1				.23				
	7		.1				0				
RB	7.5										

9-275-P
(May 1971)

WALKER MINE TAILINGS MONITORING PROGRAM

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. .....
Comp. by .....
Checked by .....

Sta. No. R-1

Dolly Creek above Tailings @ Road 112

Date 8/12 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

GAGE READINGS

Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Type of meter Marsh McBirney

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots .... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow .....

Other .....

Gage .....

Weather Warm/Clear

Air 64.0 °F @ 1038

7.9° Water °C @ 1035

..... Record removed ..... Intake flushed .....

Observer .....

Control .....

pH 8.23

CONDUCTANCE 95.2 umhos/cm

G. H. of zero flow ..... ft.

Samples @ 1024

River at—

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	Velocity At point	Velocity Mean in vertical	Adjusted for hor. angle of	Area	Discharge
LB	.8										
	1.0		.25				0				
	1.5		.60				.14				
	2		.60				.08				
	2.5		.75				0				
	3		.65				0				
	3.5		.85				0				
	4		.80				.16				
	4.5		.65				.33				
	5		.50				.69				
	5.5		.50				.12				
	6		.05				0				
RB	6.15										

9-276
(May 1971)

WALKER MINE TAILINGS MONITORING PROGRAM

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. .....
Comp. by .....
Checked by .....

Sta. No. R-3

Little Grizzly Creek above Tailings

Date 8/12 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

GAGE READINGS				
Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Type of meter .....

Date rated ..... for rod, other, ...

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots ..... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow .....

Other .....

Gage .....

..... Record removed .....

Observer .....

Control .....

pH 8.0

CONDUCTANCE 83.8 umhos/cm

G. H. of zero flow ..... ft.

Samples @ 0956

Weather Warm - Clear

Air 62.0°F @ 0945

Water 9.6°C @ 0951

Intake flushed to .....

River st—

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge
LB	2.5										
	3		.20				.03				
	3.5		.1				.68				
	4		.15				.14				
	4.5		.30				0				
	5		.15				0				
	5.5		.50				.94				
	6		.4				1.26				
	6.5		.3				0				
	7		.3				.03				
	7.5		.2				.22				
	8		.1				.39				
	8.5		.05				0				
RB	8.9										

WALKER MINE TAILINGS MONITORING PROGRAM

9-276a (May 1971)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. .....
Comp. by .....
Checked by .....

Sta. No. R-4

Little Grizzly Creek below Tailings

Date 8/12 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

GAGE READINGS				
Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Type of meter Marsh McBirney

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots .... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side

bridge ..... feet, mile, above, below

gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow .....

Weather .....

Gage ..... Air 48.2 °F @ 0853

Water 8.7 °C @ 0851

Record removed ..... Intake flushed .....

Observer .....

Control .....

pH 8.10

CONDUCTANCE 109 uMhos/cm

G. H. of zero flow ..... ft.

Samples @ 0842

River at—

Angle coef. factor	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge
LB	1.2										
	1.5		.15				0				
	2		.15				.27				
	2.5		.20				.44				
	3		.25				.46				
	3.5		.35				.43				
	4		.30				.46				
	4.5		.20				.40				
	5		.30				.48				
	5.5		.35				.60				
	6		.30				.43				
	6.5		.40				.37				
	7		.15				.30				
	7.5		.40				.38				
	8		.15				.33				
	8.5		.35				.31				
	9		.40				.22				
	9.5		.30				.10				
	10		.30				.06				
	10.5		.15				0				
RB	10.65										

WALKER MINE TAILINGS MONITORING PROGRAM

9-2754
(May 1971)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. .....
Comp. by .....
Checked by .....

Sta. No. R-6

Sediment Basin Outlet

Date 8/12, 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

GAGE READINGS				
Time		Reminder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Type of meter .....

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots .... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow No Flow ..... Weather .....

Other ..... Air ..... °C@ .....

Gage ..... Water ..... °C@ .....

..... Record removed ..... Intake flushed .....

Observer .....

Control .....

pH .....

CONDUCTANCE ..... umhos/cm

G. H. of zero flow ..... ft.

Samples o No Samples

River at—

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge
LB											
		No Over-Flow									
		No Samples									

9-275-1
(May 1971)

WALKER MINE TAILINGS MONITORING PROGRAM

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

Meas. No. .....

Comp. by .....

DISCHARGE MEASUREMENT NOTES

Checked by .....

Sta. No. R-2

Dolly Creek below Tailings Dam

Date 8/12 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Ditch. .....

Method 6/10 No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

Type of meter Marsh McBirney

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots .... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

GAGE READINGS

Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow No Water — Dry Weather Warm/Clear

Other .....

Gage ..... Air ..... °C@ .....

..... Record removed ..... Water ..... °C@ .....

Observer ..... Intake flushed .....

Control .....

pH .....

CONDUCTANCE ..... umhos/cm

G. H. of zero flow ..... ft.

~~Samples~~ No Samples

River at

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle coef.	Area	Discharge
LB											

No Water
Creek Bed is Dry

1 Bottle (field filtered), 1 bottle (Raw) at each site.

BSK ANALYTICAL LABORATORIES

1414 Stanislaus Street, Fresno CA 93706-1623
(559) 497-2888 • FAX (559) 497-2893 • www.bsklabs.com

A0H1196
USDAF3671

08/13/2010
10

A

* Required Fields

485-6935

TEMP

Client/Company Name *: USDA Forest Service Plumas National Forest

Report Attention *: Ryan Nupen

Phone * #: 530 283 7712 FAX * #

E-mail: rnupen@fs.fed.us

Address *: 159 Lawrence St. City *: Quincy State *: CA Zip *: 95971

Project Information: Walker Mine Tailings

PO #

Quote #

How would you like your completed results sent? E-Mail Fax EDD Mail Only

Sampler Name Printed / Signature: Pat Flynn

QC Request: X STD Level II

Result Request ** Surcharge: X STD 5 Day* 3 Day* 2 Day* 1 Day*

Carbon Copies (Circle One): CDHS Fresno Co EPA Kerman Co Fresno Co Other

Regulatory Compliance: Electronic Data Transfer Y N System No *

Matrix Types: RSW = Raw Surface Water, RGW = Raw Ground Water, CFW = Chlorinated Finished Water, FW = Finished Water, WW = Waste Water, CWW = Chlorinated Waste Water, SW = Storm Water, BW = Bottled Water, DW = Drinking Water, SO = Soil

Sample #	# Bottles	Sampled Date	Sampled Time	Sample Description / Location *	Matrix *	Containers / Station Code	Sulfate	Alkalinity	Hardness	Fe, Cu, Zn	Filtered in field
1	2	8/12/10	24	R-1	RSW	(Samples from creeks)	X	X	X	X	
						1 bottle raw					
2	2		0956	R-3		1 bottle filtered	X	X	X	X	
3	2		0842	R-4		@ each well	X	X	X	X	
4	2		1110	R-5			X	X	X	X	
							X	X	X	X	

(8 Total Bottles)

(R-2 Dry)

Relinquished by (Signature and Printed Name)	Company	Date	Time	Received by (Signature and Print Name)	Company
Pat Flynn	Sierra Environmental	8/12/10	1300		
Relinquished by (Signature and Printed Name)	Company	Date	Time	Received by (Signature and Print Name)	Company
Received for Lab by (Signature and Printed Name)		Date	Time	Payment Received at Delivery	
		8/13/10	1000	Date: Amount: Check/Cash/Card PIA #	

Shipping Method: CAO UPS USO WALK-IN SWC (GO) OTHER

Cooling Method: WET (BLUE) NONE

Packaging/Material: BW

Notice: Payment for services rendered is expected in full within 30 days from invoice date. Interest and service charges on delinquent accounts will be assessed at 1.5% per month, 18% per annum. BSK Associates will be called on to recover any delinquent accounts, cost of collection, including attorney fees incurred prior to or in litigation whether conducted by judgment or settlement, compromise or otherwise. The person signing for the Client or Company expressly acknowledges that they are either the Client or authorized agent of the Client and the Client agrees to be responsible for payment for analytical services on the Chain of Custody. Any modification of the analysis requested, other than specifications, will be noted in writing upon the Chain of Custody. The turnaround time for any samples received after 3:30 pm will begin the next business day.

BSK Form 0-0-0-0-0-0-0-0

Table 2. GROUND WATER SUMMARY

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE, PLUMAS NATIONAL FOREST

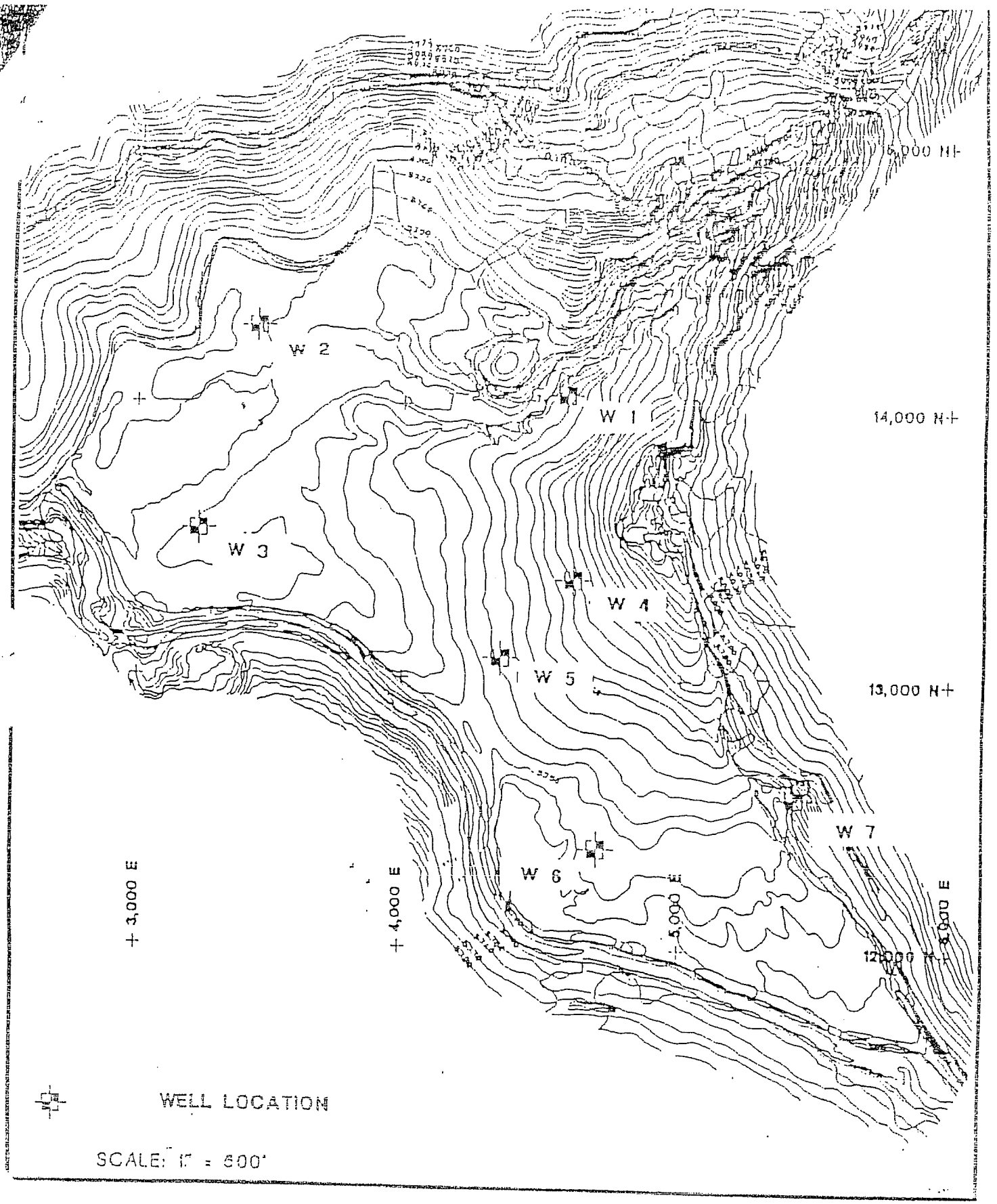
WALKER MINE TAILINGS, PLUMAS COUNTY

AUGUST2010

CONSTITUENT	UNIT	DETECTION LIMIT	W-1	W-2	W-3	W-4	W-5	W-6	W-7*
				WELL SITES					
Field Parameters									
Ground Surface Elevation	ft	0.01	N/A	5742.05	5739.15	5768.27	5754.28	5748.04	5753.85
Top of Cap Elevation	ft	0.01	N/A	5741.74	5738.83	5768.00	5754.09	5747.87	5754.91
Depth to Water	ft	0.01	N/A	2.44	5.99	20.83	9.83	6.50	1.61
Water Surface Elevation	ft	0.01	N/A	5739.30	5732.84	5747.17	5744.26	5741.37	5753.30
Laboratory									
Total Hardness as CaCO3	mg/l	5.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Alkalinity	mg/l	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfate	mg/l	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Iron	ug/l	20.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Copper	ug/l	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc	ug/l	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The data collected from this well are used for background comparisons. During this month no tests were done for dissolved metals

[1] N/A is not detected at or above the detection limit



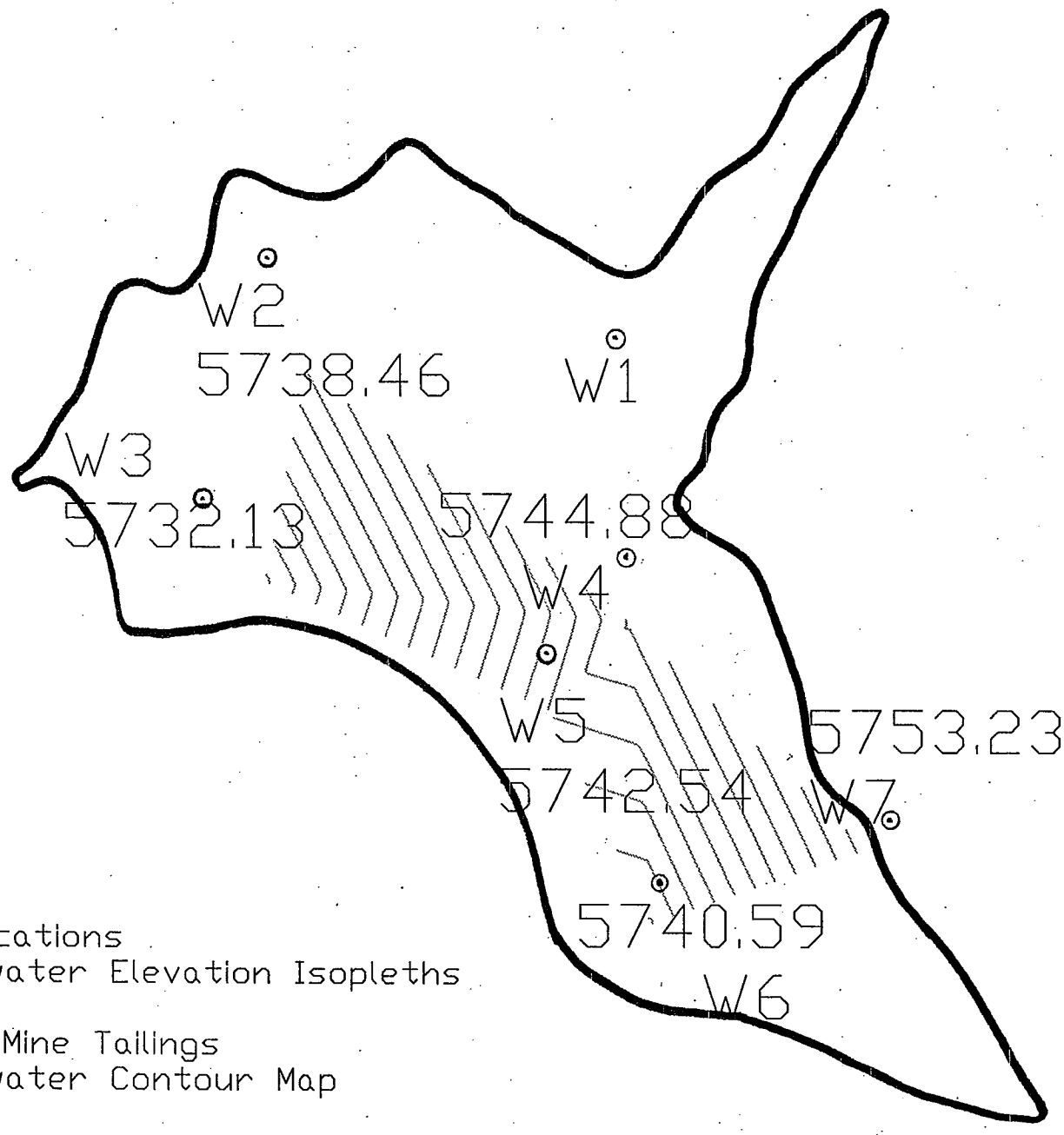
WALKER MINE TAILINGS

WALKER TAILINGS
GROUNDWATER MONITORING PROGRAM

FLUID LEVEL GAUGING

SITE LOCATION: Walker Mine DATE: 8/12/10
COMPANY NAME: Sierra Environmental
PERSONNEL: Flynn

WELL	TIME	DEPTH TO WATER	COMMENTS
W-1A	0751	9.77	
2	0812	2.44	
3	0800	5.99	
4	0740	20.83	
5	0733	9.83	
6	0721	6.50	
7	0710	1.61	



Well Locations
Groundwater Elevation Isopleths

Walker Mine Tailings
Groundwater Contour Map

August 2010

NELAP Accreditation 01103CA

Caltest ANALYTICAL LABORATORY
ENVIRONMENTAL ANALYSES

ELAP Certification 1664

ANALYTICAL RESULTS

Lab Order: K080654
Project ID A0H1196

Lab ID: K080654001 Date Collected: 8/12/2010 10:24 Matrix: Water
Sample ID: A0H1196-01 R1 Date Received: 8/17/2010 09:35

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode,Dissolved		**Prep Method:**	EPA 200.8 (filtrate)			**Prep by:** UK				
		Analytical Method:	EPA 200.8 (filtrate)					**Analyzed by:** LM		
Copper	4.3	ug/L	0.50	0.060	1	08/21/10 00:00	MPR 9093	08/23/10 22:26	MMS 5610	
Iron	0.12	mg/L	0.05	0.0020	1	08/21/10 00:00	MPR 9093	08/23/10 22:26	MMS 5610	
Zinc	4.8	ug/L	1.0	0.80	1	08/21/10 00:00	MPR 9093	08/23/10 22:26	MMS 5610	
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:** MYS		
Sulfate (as SO4)	J0.33	mg/L	0.5	0.010	1			08/23/10 19:07	WIC 2835	
Hardness, as CACO3 by Titrimetric		**Analytical Method:**	SM20-2340 C					**Analyzed by:** NP		
Hardness (as CACO3)	72	mg/L	5	1.7	1			08/25/10 15:23	WTI 1946	
Alkalinity, Total Analysis		**Analytical Method:**	SM20-2320 B					**Analyzed by:** RTE		
Alkalinity, Total (as CACO3)	76	mg/L	10	1.2	1			08/20/10 18:08	WTI 1944	
Bicarbonate (as CACO3)	76	mg/L	10	1.2	1			08/20/10 18:08	WTI 1944	
Carbonate (as CACO3)	ND	mg/L	10	1.2	1			08/20/10 18:08	WTI 1944	
Hydroxide (as CACO3)	ND	mg/L	10	1.2	1			08/20/10 18:08	WTI 1944	

Lab ID: K080654002 Date Collected: 8/12/2010 09:56 Matrix: Water
Sample ID: A0H1196-02 R-3 Date Received: 8/17/2010 09:35

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode,Dissolved		**Prep Method:**	EPA 200.8 (filtrate)			**Prep by:** UK				
		Analytical Method:	EPA 200.8 (filtrate)					**Analyzed by:** LM		
Copper	J0.34	ug/L	0.50	0.060	1	08/21/10 00:00	MPR 9093	08/23/10 22:42	MMS 5610	
Iron	0.30	mg/L	0.05	0.0020	1	08/21/10 00:00	MPR 9093	08/23/10 22:42	MMS 5610	
Zinc	1.7	ug/L	1.0	0.80	1	08/21/10 00:00	MPR 9093	08/23/10 22:42	MMS 5610	
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:** MYS		
Sulfate (as SO4)	J0.17	mg/L	0.5	0.010	1			08/23/10 19:38	WIC 2835	
Hardness, as CACO3 by Titrimetric		**Analytical Method:**	SM20-2340 C					**Analyzed by:** NP		
Hardness (as CACO3)	56	mg/L	5	1.7	1			08/25/10 15:31	WTI 1946	
Alkalinity, Total Analysis		**Analytical Method:**	SM20-2320 B					**Analyzed by:** RTE		
Alkalinity, Total (as CACO3)	63	mg/L	10	1.2	1			08/20/10 18:16	WTI 1944	
Bicarbonate (as CACO3)	63	mg/L	10	1.2	1			08/20/10 18:16	WTI 1944	
Carbonate (as CACO3)	ND	mg/L	10	1.2	1			08/20/10 18:16	WTI 1944	

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1885 North Kelly Road • Napa, California 94558
(707) 258-4000 • Fax (707) 226-1001 • e-mail: info@caltestlabs.com

NELAP Accreditation 01103CA

Caltest ANALYTICAL LABORATORY

ENVIRONMENTAL ANALYSES

ELAP Certification 1664

ANALYTICAL RESULTS

Lab Order: K080654

Project ID A0H1196

Lab ID: K080654002 Date Collected: 8/12/2010 09:56 Matrix: Water

Sample ID: A0H1196-02 R-3 Date Received: 8/17/2010 09:35

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Hydroxide (as CACO3)	ND	mg/L	10	1.2	1			08/20/10 18:16	WTI 1944	

Lab ID: K080654003 Date Collected: 8/12/2010 08:42 Matrix: Water

Sample ID: A0H1196-03 R-4 Date Received: 8/17/2010 09:35

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode,Dissolved		**Prep Method:**	EPA 200.8 (filtrate)			**Prep by:** UK				
		Analytical Method:	EPA 200.8 (filtrate)					**Analyzed by:** LM		
Copper	2.7	ug/L	0.50	0.060	1	08/21/10 00:00	MPR 9093	08/23/10 22:47	MMS 5610	
Iron	0.38	mg/L	0.05	0.0020	1	08/21/10 00:00	MPR 9093	08/23/10 22:47	MMS 5610	
Zinc	4.9	ug/L	1.0	0.80	1	08/21/10 00:00	MPR 9093	08/23/10 22:47	MMS 5610	
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:** MYS		
Sulfate (as SO4)	7.3	mg/L	0.5	0.010	1			08/23/10 20:10	WIC 2835	
Hardness, as CACO3 by Titrimetric		**Analytical Method:**	SM20-2340 C					**Analyzed by:** NP		
Hardness (as CACO3)	75	mg/L	5	1.7	1			08/25/10 15:39	WTI 1946	
Alkalinity, Total Analysis		**Analytical Method:**	SM20-2320 B					**Analyzed by:** RTE		
Alkalinity, Total (as CACO3)	75	mg/L	10	1.2	1			08/20/10 18:24	WTI 1944	
Bicarbonate (as CACO3)	75	mg/L	10	1.2	1			08/20/10 18:24	WTI 1944	
Carbonate (as CACO3)	ND	mg/L	10	1.2	1			08/20/10 18:24	WTI 1944	
Hydroxide (as CACO3)	ND	mg/L	10	1.2	1			08/20/10 18:24	WTI 1944	

Lab ID: K080654004 Date Collected: 8/12/2010 11:10 Matrix: Water

Sample ID: A0H1196-04 R-5 Date Received: 8/17/2010 09:35

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode,Dissolved		**Prep Method:**	EPA 200.8 (filtrate)			**Prep by:** UK				
		Analytical Method:	EPA 200.8 (filtrate)					**Analyzed by:** LM		
Copper	3.7	ug/L	0.50	0.060	1	08/21/10 00:00	MPR 9093	08/23/10 23:08	MMS 5610	
Iron	0.35	mg/L	0.05	0.0020	1	08/21/10 00:00	MPR 9093	08/23/10 23:08	MMS 5610	
Zinc	3.7	ug/L	1.0	0.80	1	08/21/10 00:00	MPR 9093	08/23/10 23:08	MMS 5610	
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:** MYS		
Sulfate (as SO4)	7.4	mg/L	0.5	0.010	1			08/23/10 21:29	WIC 2835	

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nelac

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ANALYTICAL RESULTS

Lab Order: K080654
Project ID A0H1196

Lab ID: K080654004 Date Collected: 8/12/2010 11:10 Matrix: Water
Sample ID: A0H1196-04 R-5 Date Received: 8/17/2010 09:35

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Hardness, as CACO3 by Titrimetric		**Analytical Method:**	SM20-2340 C					**Analyzed by:**	NP	
Hardness (as CACO3)	75	mg/L	5	1.7	1			08/25/10 15:49	WTI 1946	
Alkalinity, Total Analysis		**Analytical Method:**	SM20-2320 B					**Analyzed by:**	RTE	
Alkalinity, Total (as CACO3)	74	mg/L	10	1.2	1			08/20/10 18:33	WTI 1944	
Bicarbonate (as CACO3)	74	mg/L	10	1.2	1			08/20/10 18:33	WTI 1944	
Carbonate (as CACO3)	ND	mg/L	10	1.2	1			08/20/10 18:33	WTI 1944	
Hydroxide (as CACO3)	ND	mg/L	10	1.2	1			08/20/10 18:33	WTI 1944	

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QUALITY CONTROL DATA

Lab Order: K080654
Project ID: A0H1196

Analysis Description:	Metals by ICPMS Collision Mode,Dissolved	**QC Batch:**	MPR/9093
Analysis Method:	EPA 200.8 (filtrate)	**QC Batch Method:**	EPA 200.8 (filtrate)

METHOD BLANK: 347749

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Copper	ND	0.50	0.06	ug/L	
Iron	ND	50	2.0	ug/L	
Zinc	ND	1.0	0.8	ug/L	

LABORATORY CONTROL SAMPLE: 347750

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	40	40	101	85-115	
Iron	ug/L	10000	9730	97	85-115	
Zinc	ug/L	40	41	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 347751 347752

Parameter	Units	K080654001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Copper	ug/L	4.3	40	47	44	106	99	85-115	5.8	20	
Iron	ug/L	120	10000	10500	10400	104	103	85-115	1	20	
Zinc	ug/L	4.8	40	47	44	104	98	85-115	5.9	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 347753 347754

Parameter	Units	K080686002 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Copper	ug/L	2.2	40	42	43	99	102	85-115	3.2	20	
Iron	ug/L	476	10000	10500	10500	100	100	85-115	0.4	20	
Zinc	ug/L	3.4	40	42	44	97	101	85-115	3.3	20	

Analysis Description:	Anions by Ion Chromatography	**QC Batch:**	WIC/2835
Analysis Method:	EPA 300.0	**QC Batch Method:**	EPA 300.0

METHOD BLANK: 348097

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Sulfate (as SO4)	J0.011	0.5	0.01	mg/L	

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QUALITY CONTROL DATA

Lab Order: K080654
Project ID: A0H1196

Analysis Description:	Anions by Ion Chromatography	**QC Batch:**	WIC/2835
Analysis Method:	EPA 300.0	**QC Batch Method:**	EPA 300.0

LABORATORY CONTROL SAMPLE: 348098

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate (as SO4)	mg/L	10	9.1	91	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 348099 348100

Parameter	Units	K080827004 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Sulfate (as SO4)	mg/L	54	16	84	84	192	187	90-110	0.8	20	1

Analysis Description:	Alkalinity, Total Analysis	**QC Batch:**	WTI/1944
Analysis Method:	SM20-2320 B	**QC Batch Method:**	SM20-2320 B

METHOD BLANK: 347666

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Alkalinity, Total (as CACO3)	ND	10	1	mg/L	
Bicarbonate (as CACO3)	ND	10	1	mg/L	
Carbonate (as CACO3)	ND	10	1.2	mg/L	
Hydroxide (as CACO3)	ND	10	1	mg/L	

LABORATORY CONTROL SAMPLE: 347667

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total (as CACO3)	mg/L	100	95	95	80-120	
Bicarbonate (as CACO3)	mg/L	100	95	95	80-120	

SAMPLE DUPLICATE: 347668

Parameter	Units	K080618001 Result	DUP Result	RPD	Max RPD	Qualifiers
Alkalinity, Total (as CACO3)	mg/L	175	176	0.3	20	
Bicarbonate (as CACO3)	mg/L	175	176	0.3	20	
Carbonate (as CACO3)	mg/L	0	0	0	20	

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QUALITY CONTROL DATA

Lab Order: K080654
Project ID: A0H1196

Analysis Description:	Alkalinity, Total Analysis	**QC Batch:**	WTI/1944
Analysis Method:	SM20-2320 B	**QC Batch Method:**	SM20-2320 B

SAMPLE DUPLICATE: 347668

Parameter	Units	K080618001 Result	DUP Result	RPD	Max RPD	Qualifiers
Hydroxide (as CACO3)	mg/L	0	0	0	20	

Analysis Description:	Hardness, as CACO3 by Titrimetric	**QC Batch:**	WTI/1946
Analysis Method:	SM20-2340 C	**QC Batch Method:**	SM20-2340 C

METHOD BLANK: 348238

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Hardness (as CACO3)	J4.7	5	2	mg/L	

LABORATORY CONTROL SAMPLE: 348239

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Hardness (as CACO3)	mg/L	100	97	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 348240 348241

Parameter	Units	K080446001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Hardness (as CACO3)	mg/L	140	100	210	210	73	77	80-120	2	20	2

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1 Bottle (field filtered), 1 bottle (Raw) at each site.

BSK ANALYTICAL LABORATORIES

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(559) 497-2888 • FAX (559) 497-2893 • www.bsklabs.com

485-6935

* Required Fields

TEMP

ANALYTICAL

ANALYSIS REQUESTED

Client/Company Name *: USDA Forest Service Plumas National Forest	Report Attention *: Ryan Nupen	Phone * #: 530 283 7712 FAX * #: E-mail: rnupen@fs.fed.us
Address *: 159 Lawrence St. City *: Quincy State *: CA Zip *: 95971		Carbon Copies: (Circle One) CDHS ☐ Fresno Co ☐ EPA ☐ Merced Co ☐ Tulare Co ☐ Other
Project Information: Walker Mine Tailings	PO #: Quote #:	
How would you like your completed results sent? ☐ E-Mail ☐ Fax ☐ EDD ☐ Mail Only		Regulatory Compliance: Electronic Data Transfer ☐ Y ☐ N System No *
Sampler Name Printed / Signature: Pat Flynn	QC Request: ☒ STD ☐ Level II	Result Request ** Surcharge: ☒ STD ☐ 1 Day** ☐ 2 Day** ☐ 3 Day**

Matrix Types: RSW = Raw Surface Water, CFW = Clorinated Finished Water, CWW = Chorinated Waste Water, BW = Bottled Water, RGW = Raw Ground Water, FW = Finished Water, WW = Waste Water, SW = Storm Water, DW = Drinking Water, SO = Solid

Sample #	# Bottles	Sampled Date	Sampled Time	Sample Description / Location *	Matrix *	Comments / Station Code	Sulfate	Alkalinity	Hardness	Fe, Cu, Zn (Filtered in field)			
	2	8/12	1024	R-1	RSW	(Samples from creeks)	X	X	X	X			
	~~2~~			~~R-2~~		1 bottle raw	~~X~~	~~X~~	~~X~~	~~X~~			(R-2 Dry)
	2		0956	R-3		1 bottle filtered	X	X	X	X			
	2		0842	R-4		@ each well	X	X	X	X			
	2		1110	R-5			X	X	X	X			
	(8 Total Bottles)												

Relinquished by: (Signature and Printed Name) [signature] / Pat Flynn	Company: Sierra Environmental	Date: 8/12/10	Time: 1300	Received by (Signature and Print Name):	Company:
Relinquished by: (Signature and Printed Name)	Company:	Date:	Time:	Received by (Signature and Print Name):	Company:
Received for Lab by: (Signature and Printed Name)		Date:	Time:	Payment Received at Delivery: Date: Amount: Check/Cash/Card PIA # Init	

Shipping Method: CAO UPS GSO WALK-IN SJVC FED EX OTHER

Cooling Method: WET BLUE NONE

Packing Material:

Notice: Payment for services rendered as noted herein are due in full within 30 days from when invoiced. If not so paid, account balances are deemed delinquent. Delinquent balances are subject to monthly service/re-billing charges and interest calculated at 1 1/2% per month, 18% per annum. BSK A. Associates shall be entitled to receive on delinquent accounts, costs of collections, including attorney's fees incurred prior to or in litigation whether concluded by judgment, settlement, compromise or otherwise. The person signing for the client Company expressly acknowledges that they are either the Client or authorized agent to the Client and the Client agrees to be responsible for payment for analytical services on this Chain of Custody. Any modification of the analysis requested, either type or quantities, will be noted and agreed upon this Chain of Custody. The turn around time for any samples received after 3:00 pm will begin the next business day.

September 2010

SURFACE AND GROUNDWATER TEST RESULTS AND SUPORTING DOCUMENTATION

MONITORING REPORT

Discharger: USDA Forest Service, Plumas National Forest

Facility: Walker Mine Tailings, Plumas County

Reporting Frequency: Quarterly

Monitoring Period: September 2010

Findings:

(1) Surface Water. Samples were collected on 09/30/2010. The surface water sample collected at the compliance station, R-5, Little Grizzly Creek near Brown's Cabin, was within the limitation for copper (see Table 1). The remaining R-5 constituents also fall within the prescribed limitations for dissolved iron and zinc. There was no measureable flow at R-2 (tailings dam spillway) which reduced the release of copper from the tailings area to Dolly Creek in September. Concentrations of zinc were detected in 4 of the 5 samples taken but none of these concentrations exceeded the limitation of zinc. The concentration of iron, was within the limitation at all of the stations.

(2) Groundwater. Samples were collected on 09/30/2010. Table 2 summarizes the findings for groundwater samples collected from the site. No concentrations of dissolved copper were found at either of the sampling wells (W-5, W-7). Concentrations of dissolved zinc were found in both wells, with a maximum concentration of 1.9 ug/l at W-7. Dissolved iron was found in W-5 with a measured concentration of 30 mg/l. The reason for the increase in dissolved iron at W-5 remains unclear but represents a 100% increase over the dissolved iron from the September of 2009 sample. Dissolved iron was found in W-7 in similar concentrations to those from September 2009. These results will require out-year testing of W-5 and W-7 to continually monitor the marked change that has occurred in the groundwater iron concentrations at these locations.

Groundwater elevations were measured in six of seven wells at the site; W-1 was destroyed during construction in 2007. Depth to water measurements were relatively unchanged from September 2009. The groundwater depth results continue to show a definite gradient towards Little Grizzly Creek along the Dolly Creek Channel to the settling pond (R-6). With the elevation of the Little Grizzly Creek channel approximately 20 feet below the surface of the tailings area, there is a strong gradient towards little Grizzly Creek all along of its course adjacent to the tailings area.

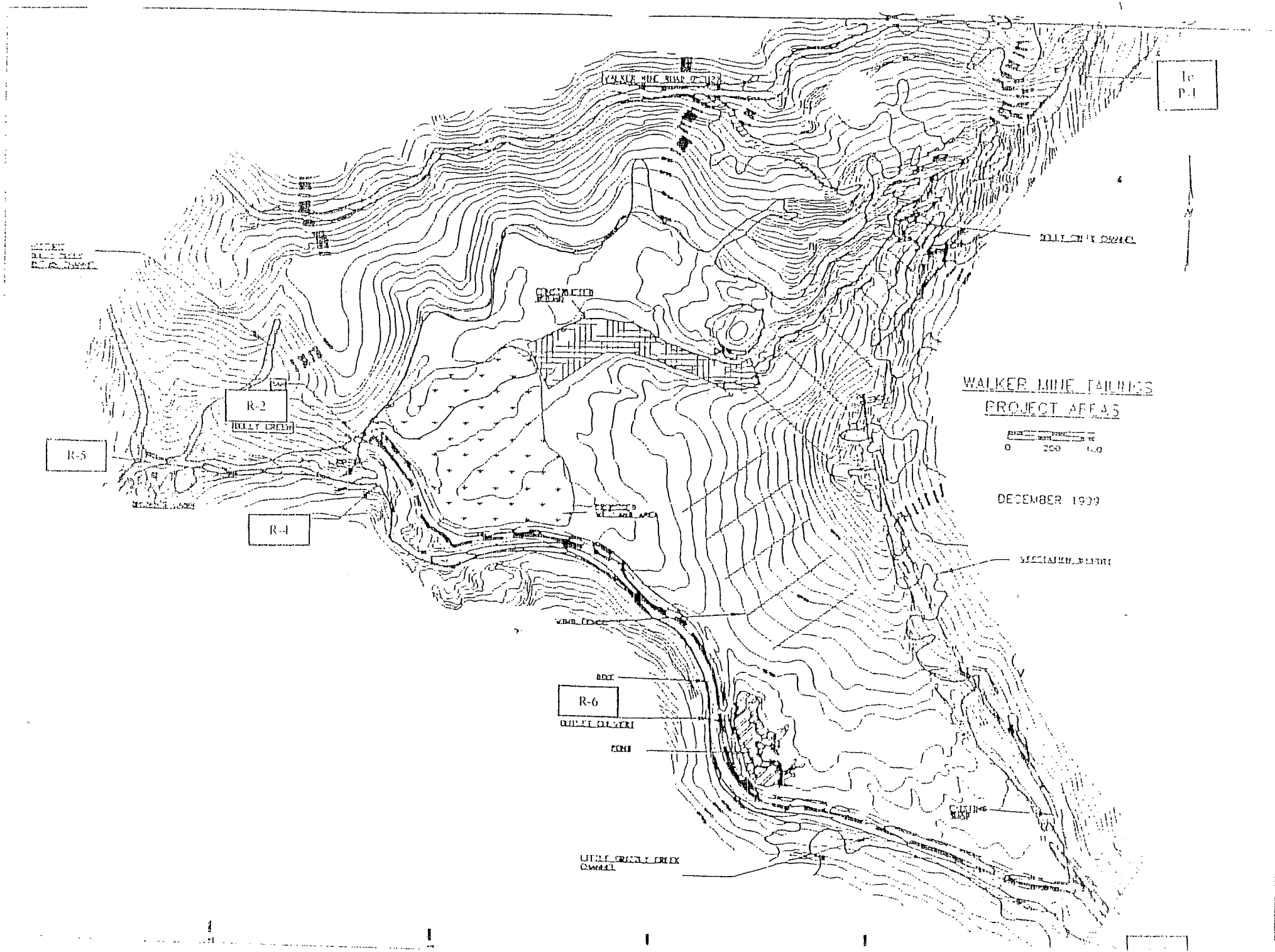

WALKER MINE TAILINGS
PROJECT AREAS
0
200
DECEMBER 1999
R-2
R-5
R-4
R-6
N

Table 1. SURFACE WATER SUMMARY REPORT

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE, PLUMAS NATIONAL FOREST

WALKER MINE TAILINGS, PLUMAS COUNTY

September, 2010

CONSTITUENT	UNITS	DETECTION LIMITS	R-1	R-2	R-3[1]	R-4	R-5[2]	R-6	Limitation @R-5[3]
Field Parameters									
Flow	cfs		0.35	N/A	0.19	0.63	1.82	0	N/A
pH	number		8.28	N/A	8.34	8.29	8.39	N/A	N/A
Specific Conductance	umhos/cm		105	N/A	96.8	120	123.5	N/A	N/A
Air Temperature	℉		79	N/A	90	70	80	N/A	N/A
Water Temperature	℃		10.6	N/A	12.9	9.5	10.9	N/A	N/A
Laboratory									
Total Hardness as CaCO3	mg/l	5	72	N/A	58	82	67	N/A	N/A
Total Alkalinity as CaCO3	mg/l	1	78	N/A	67	80	79	N/A	N/A
Sulfate	mg/l	0.5	0.28	N/A	0.079	9.6	9.4	N/A	N/A
Turbidity	NTU	0.05	2.89	N/A	0.94	0.98	0.84	N/A	N/A
Dissolved Iron	ug/l	20	0.13	N/A	0.2	0.26	0.31	N/A	N/A
Copper	ug/l	0.5	3.7	N/A	0.34	3.1	2.4	N/A	N/A
Dissolved Zinc	ug/l	1.0	1.6	N/A	N/A	3.1	1	N/A	N/A

[1] R-3 is the background station located above the tailiings area on Little Grizzly Creek.

[2] R-5 is the compliance station located near Brown's Cabin, downstream from the confluence of Dolly Creek with Little Grizzly Creek.

[3] The compliance values for copper and zinc are calculated with the R-5 hardness value of 67 mg/l as CaCO3.

WALKER MINE TAILINGS MONITORING PROGRAM

8-276-2
(May 1971)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. .....
Comp. by .....
Checked by .....

Sta. No. R-5

Little Grizzly Creek @ Brown's Cabin

Date 9/30 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secs. ..... C. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

GAGE READINGS				
Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Type of meter Marsh McBirney

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots .... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found ..... changed to ..... at .....

Correct .....

Levels obtained .....

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow ..... Weather Warm - Clear

Other ..... Air 80° F @ 1603

Gage ..... Water 10.9 °C @ 1605

..... Record removed ..... Intake flushed "

Observer .....

Control .....

pH 8.39

CONDUCTANCE 123.5 umhos/cm

G. H. of zero flow ..... ft.

Samples @ 1610

River at—

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge
LB	1.2										
	1.5		.3				~~0~~				
	2		.35				.25				
	2.5		.6				.48				
	3		.7				.39				
	3.5		.7				.46				
	4		.6				.12				
	4.5		.6				.13				
	5		.6				.09				
	5.5		.7				.07				
	6		.7				.08				
	6.5		.6				.12				
	7		.5				.13				
	7.5		.5				.05				
	8		.25				~~0~~				
	8.5		.2				~~0~~				
RB	8.7										

9-275-F
(May 1971)

WALKER MINE TAILINGS MONITORING PROGRAM

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

Meas. No. .....
Comp. by .....
Checked by .....

DISCHARGE MEASUREMENT NOTES

Sta. No. R-1

Dolly Creek above Tailings @ Road 112

Date 9/30 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secr. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

GAGE READINGS				
Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Type of meter Marsh McBirney

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots .... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow ..... Weather Warm - Clear

Other .....

Gage ..... Air 79° F @ 1513

..... Water 10.6 °C @ 1515

..... Record removed ..... Intake flushed .....

Observer .....

Control .....

pH 8.28

CONDUCTANCE 105 umhos/cm

G. H. of zero flow ..... ft.

Samples @ 1510

River at—

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge
LB	.55										
	1		.5				.02				
	1.5		.55				.12				
	2		.7				.11				
	2.5		.75				0				
	3		.85				0				
	3.5		.75				0				
	4		.65				.10				
	4.5		.6				.42				
	5		.45				.5				
	5.5		.15				0				
RB	5.85										

WALKER MINE TAILINGS MONITORING PROGRAM

9-275-a
(May 1931)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

Mem. No. .....
Comp. by .....
Checked by .....

DISCHARGE MEASUREMENT NOTES

Sta. No. R-3

Little Grizzly Creek above Tailings

Date 9/30 @ 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

Type of meter Marsh McBirney

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots ..... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

GAGE READINGS

Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%) based on following conditions: Cross section .....

Flow ..... Weather Warm - clear

Other .....

Gage ..... Air 90° F @ 1357

..... Record removed ..... Water 12.9 °C @ 1359

Observer ..... Intake flushed .....

Control .....

pH 8.34

CONDUCTANCE 96.8 umhos/cm

G. H. of zero flow ..... ft.

Samples @ 1350

River at

Angle coefficient Meter	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	Velocity At point	Velocity Mean or vertical	Adjusted for hor. angle of	Area	Discharge
LB	2.5										
	3		.1				0				
	3.5		.1				.30				
	4		.15				0				
	4.5		.15				.18				
	5		.2				0				
	5.5		.35				0				
	6		.3				.43				
	6.5		.4				.36				
	7		.3				0				
	7.5		.25				.22				
	8		.1				0				
	8.5		0				0				
RB	8.8										

9-275-1
(May 1971)

WALKER MINE TAILINGS MONITORING PROGRAM

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. .....
Comp. by .....
Checked by .....

Sta. No. R-4

Little Grizzly Creek below Tailings

Date 9/30 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

GAGE READINGS

Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Type of meter Marsh McBirney

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots .... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow ..... Weather Warm - Clear

Other ..... Air 70 °F @ 1223

Gage ..... Water 9.5 °C @ 1225

..... Record removed ..... Intake flushed ?

Observer .....

Control .....

pH 8.29

CONDUCTANCE 120 umhos/cm

G. H. of zero flow ..... ft.

Samples @ 1216

River at—

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge
LB	.8										
	1		.1				0				
	1.5		.1				0				
	2		.15				.02				
	2.5		.15				.25				
	3		.1				.33				
	3.5		.2				.22				
	4		.35				.41				
	4.5		.35				.32				
	5		.3				.48				
	5.5		.25				.59				
	6		.4				.29				
	6.5		.4				.19				
	7		.25				.42				
	7.5		.35				.35				
	8		.5				.28				
	8.5		.3				.12				
	9		.15				0				
	9.5		.2				0				
	10		.1				0				
RB	10.5										

WALKER MINE TAILINGS MONITORING PROGRAM

9-275-P
(May 1971)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. .....

Comp. by .....

Checked by .....

Sta. No. R-6

Sediment Basin Outlet

Date 9/30, 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method ..... No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

GAGE READINGS				
Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Type of meter N/A

Date rated .... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots ..... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow No Flow Weather .....

Other ..... Air ..... °C@ .....

Gage ..... Water ..... °C@ .....

..... Record removed ..... Intake flushed by .....

Observer .....

Control .....

pH .....

CONDUCTANCE ..... umhos/cm

G. H. of zero flow ..... ft.

No Samples

River at—

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for bar, angle or	Area	Discharge
	(No Flow)										
	(No Samples)										

9-275-F
(May 1971)

WALKER MINE TAILINGS MONITORING PROGRAM

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

DISCHARGE MEASUREMENT NOTES

Meas. No. .....
Comp. by .....
Checked by .....

Sta. No. R-2

Dolly Creek below Tailings Dam

Date 9/30 2010 Party Flynn

Width ..... Area ..... Vel. ..... G. H. ..... Disch. .....

Method 6/10 No. secs. ..... G. H. change ..... in ..... hrs. Susp. .....

Method coef. ..... Hor. angle coef. ..... Susp. coef. ..... Meter No. .....

GAGE READINGS				
Time		Recorder	Inside	Outside
Weighted M. G. H.				
G. H. correction				
Correct M. G. H.				

Type of meter Marsh McBirney

Date rated ..... for rod, other.

Meter ..... ft. above bottom of weight.

Spin before meas. ..... after .....

Meas. plots .... % diff. from rating .....

Wading, cable, ice, boat, upstr., downstr., side bridge ..... feet, mile, above, below gage, and .....

Check-bar, found .....

changed to ..... at .....

Correct .....

Levels obtained .....

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%), based on following conditions: Cross section .....

Flow No Flow Weather .....

Other .....

Gage ..... Air ..... °C@ .....

..... Water ..... °C@ .....

..... Record removed ..... Intake flushed .....

Observer .....

Control .....

pH .....

CONDUCTANCE ..... umhos/cm

G. H. of zero flow ..... ft.

No Samples

River at—

Angle coefficient	Dist. from initial point	Width	Depth	Observation depth	Revolutions	Time in seconds	VELOCITY At point	VELOCITY Mean in vertical	Adjusted for hor. angle or	Area	Discharge
	No Flow										
	No Samples										

.0 .10 .20 .30 .40 .50 .60 .70 .75

.80 .85 .90 .92 .94 .96 .97 .98 .99 1.00 .99 .98 .97 .96 .94 .92 .90 .85 .80

.0 .10 .20 .30 .40 .50 .60 .70 .75

BSK Laboratories, Inc. (Plumas Nat. Forest)

Chain of Custody Form

A0J0272
USDAF3671
10/05/2010

Report To:
Client: USDA Forest Service
Attn: Ryan Nupen
Street Address: 159 Lawrence St.
City, State, Zip: Quincy, CA 95971
Phone: 530 283 7712 Fax:
Email Address: rnupen@fs.fed.us
Work Order #:

Project #:
Project Name: Walker Mine Tailings
Global ID #:
Sampler(s): Flynn

Analysis Requested

Comments: Fe, Cu, Zn Field Filtered and Preserved
Routine - TAT

Sample #	Description	Date Sampled	Time Sampled	Sulfate	Alkalinity	Hardness	Fe Filter/Preserve	Cu "	Zn "	Sample Matrix: Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other	Turnaround # of work days*	Notes
1	W-3	9/30/10	1110	X	X	X	X	X	X			X					Monitoring Well
2	W-5		0944	X	X	X	X	X	X			X					" "
3	W-7		0835	X	X	X	X	X	X			X					" "
4	R-1		1510	X	X	X	X	X	X			X					Creek
5	R-3 @1350		[illegible]	X	X	X	X	X	X			X					"
6	R-4		1216	X	X	X	X	X	X			X					"
7	R-5		1610	X	X	X	X	X	X			X					"

Are there any tests with holding times less than or equal to 48 hours? ☐ Yes ☐ No

* Standard Turnaround = 10 work days

Billing: ☒ Same as above
Client:
Address:
City: State Zip
Attn:
PO#:

EDF Required? ☐ Yes ☐ No

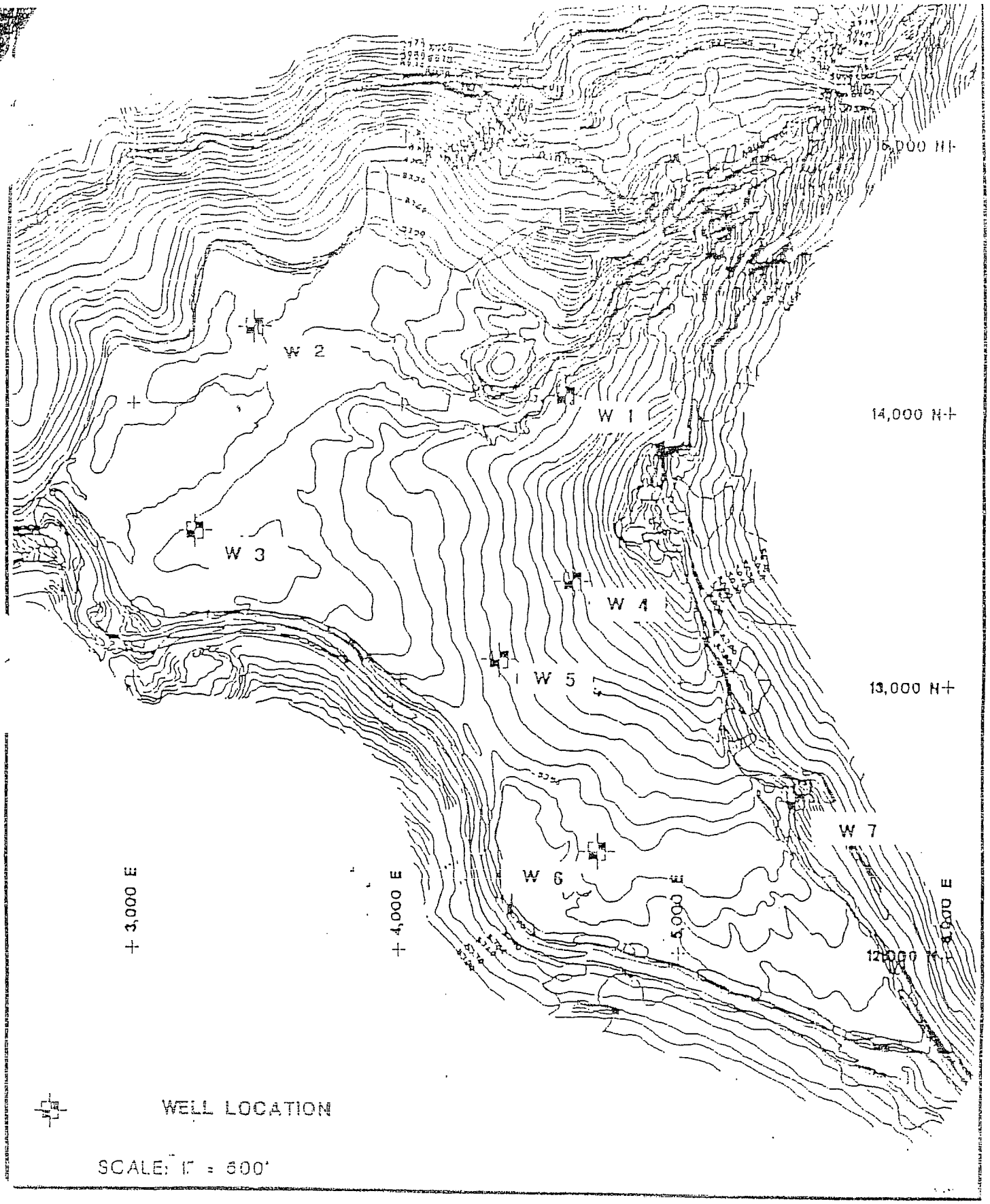
Send Copy to State of CA? (EDT) ☐ Yes ☐ No

Sample Disposal: ☐ Return to Client ☐ Disposal by lab ☐ Archive: Months

Special Reporting: ☐ QC ☐ EDF ☐ Raw Data

		Date	Time
1. Relinquished By	[signature]	9/30/10	1700
2. Relinquished By	Ryan Nupen	10/4/10	0800
3. Relinquished By			

		Date	Time
1. Received By	Ryan Nupen	9/30/10	17:00
2. Received By			
3. Received By	[signature]	10/5/10	1000



WALKER MINE TAILINGS

Table 2. GROUND WATER SUMMARY

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE, PLUMAS NATIONAL FOREST

WALKER MINE TAILINGS, PLUMAS COUNTY

September, 2010

		DETECTION		WELL SITES					
CONSTITUENT	UNIT	LIMIT	W-1	W-2	W-3	W-4	W-5	W-6	W-7*
Field Parameters									
Ground Surface Elevation	ft	0.01	N/A	5742.05	5739.15	5768.27	5754.28	5748.04	5753.85
Top of Cap Elevation	ft	0.01	N/A	5741.74	5738.83	5768.00	5754.09	5747.87	5754.91
Depth to Water	ft	0.01	N/A	0.78	4.01	18.89	6.98	3.94	0.46
Water Surface Elevation	ft	0.01	N/A	5740.96	5734.82	5749.11	5747.11	5743.93	5754.45
Laboratory									
Total Hardness as CaCO3	mg/l	5.0	N/A	N/A	220.0	N/A	180.0	N/A	47.0
Total Alkalinity	mg/l	1.0	N/A	N/A	123.0	N/A	41.0	N/A	42.0
Sulfate	mg/l	0.5	N/A	N/A	68.0	N/A	160.0	N/A	0.1
Dissolved Iron	mg/l	20.0	N/A	N/A	0.6	N/A	30.0	N/A	0.0
Dissolved Copper	ug/l	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Zinc	ug/l	1.0	N/A	N/A	0.9	N/A	1.7	N/A	1.9

*W-7 is located upgradient and off-site in a wet area. The data collected from this well are used for background comparisons.

[1] ND is not detected at or above the detection limit

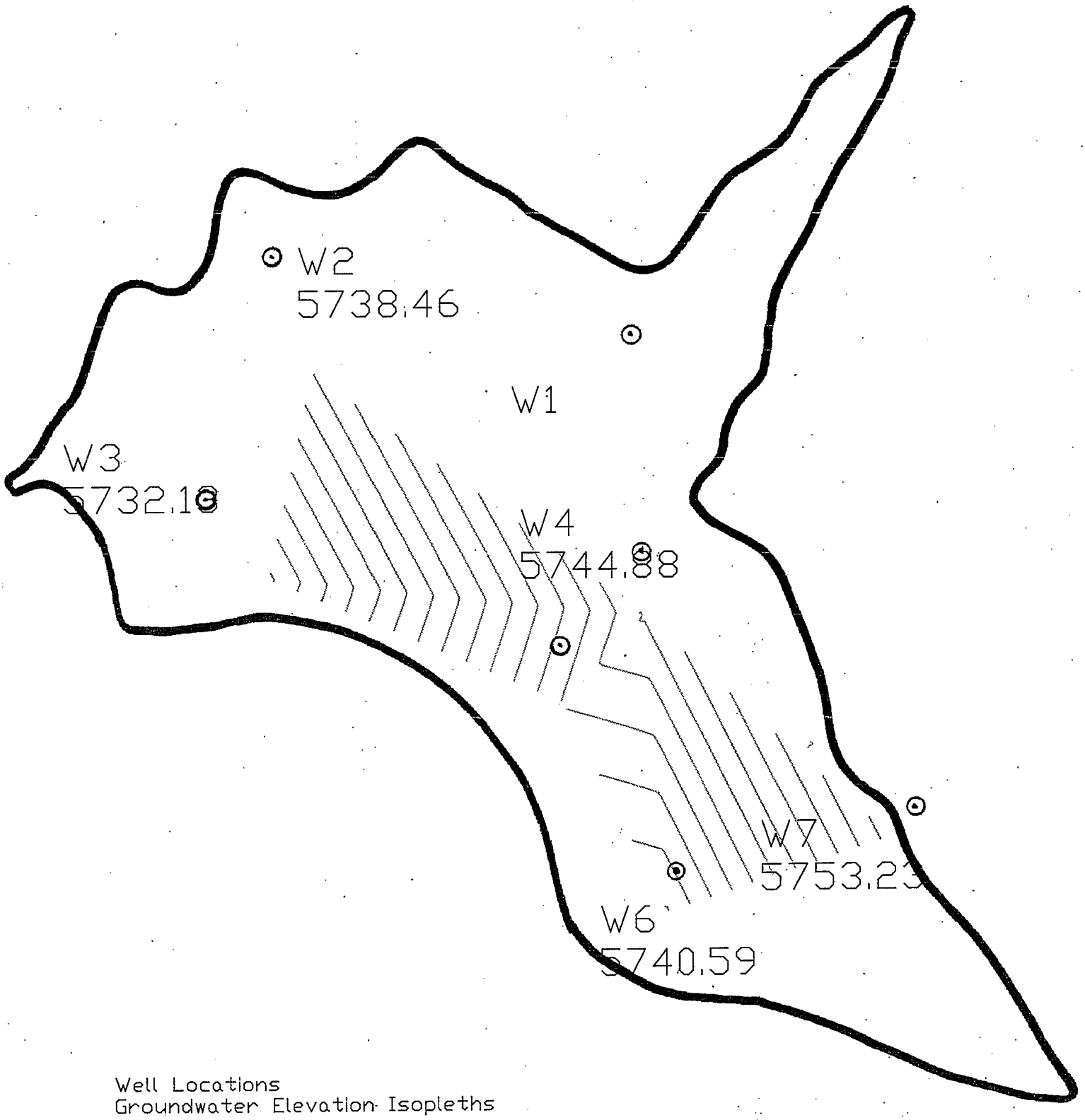
WALKER TAILINGS
GROUNDWATER MONITORING PROGRAM

FLUID LEVEL GAUGING

SITE LOCATION: Walker Mine DATE: 9/30/10
COMPANY NAME: Sierra Environmental
PERSONNEL: Flynn

WELL	TIME	DEPTH TO WATER	COMMENTS
W-1A	1018	10.79	Lubricate hook
2	1132	3.28	
3	1033	6.70	Purge + Sample well
4	0854	23.12	
5	0904	11.55	Purge + Sample well
6	1001	7.28	
7	0737	1.68	Purge + Sample well

Note: Wells 1A, 2, 4, and 6 (Gauge Only)



Well Locations
Groundwater Elevation Isopleths

Walker Mine Tailings
Groundwater Contour Map

September 2010

Water-Quality Sampling Information

Project Number:

Project Name: Walker Mine Tailings

Project Location: Walker Mine

Site Conditions/Weather: Dry / Warm - Clear

Page 1 of 1

Date: 9/30/10

Day: M T W (Th) F S S

Staff: Flynn

Comments :

SAMPLING METHOD

- [ ] Centrifugal Pump
- [ ] Submersible Pump
- [ ] Hand Bail
- [x] Disposable Bailer
- [ ] Teflon Bailer
- [ ] (other)

Sample Number: W-3

- [ ] FB:
- [ ] DUP:

Analysis Requested

Fe, Cu, Zn
Hardness, Alk
SO_4

Number and Types of Bottle Used

Method of shipment

BSK
(lab name)

- [ ] Courier
- [ ] Hand Deliver

Calculation Area

Height of water column =
Depth to water =

80% DTW

Well Number: W-3
Depth of Water: 6.70
Well Depth: 34.25
Height of Water Column: 27.55
Volume in Well: (gallons) 4.41
3 Well Volumes: (gallons) 13.22

Well Diameter: 2"

- [x] 2" (0.16 gallon / feet)
- [ ] 4" (0.65 gallon/ feet)
- [ ] 5" (1.02 gallon/ feet)
- [ ] 6" (1.47 gallon/ feet)

Time	Depth to Water	Volume Purged (gallons)	Totalizer Reading	Temperature °C	pH	Cond. ms/ cm	Turbidity (NTU)	Remarks
1031								Start Purge
1045		5		11.8	7.99	302	13.2	Low Tb / No odor
1055		10		10.5	8.12	290	8.7	" "
1104		15		10.6	8.19	290	7.8	" "
1110								Sample W-3

Inlet Depth:

Signed: Date:

Water-Quality Sampling Information

Project Number: _____

Project Name: Walker Mine Tailings

Project Location: Walker Mine

Site Conditions/Weather: Dry / Cool - Clear

Page 1 of 1

Date: 9/30/10

Day: M T W (Th) F S S

Staff: Flynn

Comments : _____

SAMPLING METHOD

- [ ] Centrifugal Pump
- [ ] Submersible Pump
- [ ] Hand Bail
- [x] Disposable Bailer
- [ ] Teflon Bailer
- [ ] _____ (other)

Sample Number: W-7

- [ ] FB: _____
- [ ] DUP: _____

Analysis Requested

Fe, Cu, Zn
Hardness, Alk.
SO_4

Number and Types of Bottle Used

_____

Method of shipment

BSK
(lab name)

- [ ] Courier
- [ ] Hand Deliver

Calculation Area

Height of water column =
Depth to water =

80% DTW _____

Well Number: W-7
Depth of Water: 1.68
Well Depth: 11.00
Height of Water Column: 9.32
Volume in Well: (gallons) 1.49
3 Well Volumes: (gallons) 4.47

Well Diameter: 2"

- [x] 2" (0.16 gallon / feet)
- [ ] 4" (0.65 gallon/ feet)
- [ ] 5" (1.02 gallon/ feet)
- [ ] 6" (1.47 gallon/ feet)

Time	Depth to Water	Volume Purged (gallons)	Totalizer Reading	Temperature °C	pH	Cond. ms/ cm	Turbidity (NTU)	Remarks
0757								Start Purge
0808		2		7.3	6.71	71.7	15.4	Low Tb / No odor
0814		4		7.1	6.51	56.2	59.3	Mod. Low Tb / No odor
0821		6		7.1	6.47	54.6	111.3	Mod Tb / No odor
0835								Sample W-7

Inlet Depth: _____

_____ Signed: _____ Date: _____

Water-Quality Sampling Information

Project Number: _____

Project Name: Walker Mine Tailings

Project Location: Walker Mine

Site Conditions/Weather: Dry / Warm - Clear

Page 1 of 1

Date: 9/30/10

Day: M T W (Th) F S S

Staff: Flynn

Comments : _____

SAMPLING METHOD

- ☐ Centrifugal Pump
- ☐ Submersible Pump
- ☐ Hand Bail
- ☒ Disposable Bailer
- ☐ Teflon Bailer
- ☐ _____ (other)

Sample Number: W-5

- ☐ FB: _____
- ☐ DUP: _____

Analysis Requested

Fe, Cu, Zn
Hardness, Alk
SO_4

Number and Types of Bottle Used

_____

Method of shipment

BSK
(lab name)

- ☐ Courier
- ☐ Hand Deliver

Well Number: W-5

Depth of Water: 11.55

Well Depth: 40.30

Height of Water Column: 28.75

Volume in Well: (gallons) 4.6

3 Well Volumes: (gallons) 13.8

Well Diameter: 2"

- ☒ 2" (0.16 gallon / feet)
- ☐ 4" (0.65 gallon/ feet)
- ☐ 5" (1.02 gallon/ feet)
- ☐ 6" (1.47 gallon/ feet)

Calculation Area

Height of water column =

Depth to water =

80% DTW _____

Time	Depth to Water	Volume Purged (gallons)	Totalizer Reading	Temperature °C	pH	Cond. ms/ cm	Turbidity (NTU)	Remarks
0909								Start Purge
0917		5		8.6	7.01	356	9.9	Low To / No odor
0927		10		8.6	7.08	348	12.6	" "
0936		15		8.9	7.16	350	6.7	" "
0944								Sample W-5

Inlet Depth: _____

_____ Signed: _____ Date: _____

WALKER TAILINGS
GROUNDWATER MONITORING PROGRAM

FLUID LEVEL GAUGING

SITE LOCATION: Walker Mine DATE: 9/30/10
COMPANY NAME: Sierra Environmental
PERSONNEL: Flynn

WELL	TIME	DEPTH TO WATER	COMMENTS
W-1A	1018	10.79	Lubricate hook
2	1132	3.28	
3	1033	6.70	Purge + Sample well
4	0854	23.12	
5	0904	11.55	Purge + Sample Well
6	1001	7.28	
7	0737	1.68	Purge + Sample Well

Note: Wells 1A, 2, 4, and 6 (Gauge Only)

ANALYTICAL RESULTS

Lab Order: K100393
Project ID A0J0272

Lab ID: K100393001 Date Collected: 9/30/2010 11:10 Matrix: Water
Sample ID: A0J0272-01 W-3 Date Received: 10/8/2010 08:12

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode,Dissolved		**Prep Method:**	EPA 200.8 (filtrate)			**Prep by:** UK				
		Analytical Method:	EPA 200.8 (filtrate)					**Analyzed by:** LM		
Copper	ND	ug/L	0.50	0.060	1	10/13/10 00:00	MPR 9243	10/14/10 17:40	MMS 5675	1
Iron	0.61	mg/L	0.05	0.0020	1	10/13/10 00:00	MPR 9243	10/14/10 17:40	MMS 5675	
Zinc	J0.9	ug/L	1.0	0.80	1	10/13/10 00:00	MPR 9243	10/14/10 17:40	MMS 5675	
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:** MYS		
Sulfate (as SO4)	68	mg/L	10	0.25	25			10/16/10 01:08	WIC 2889	
Hardness, as CACO3 by Titrimetric		**Analytical Method:**	SM20-2340 C					**Analyzed by:** NP		
Hardness (as CACO3)	220	mg/L	5	1.7	1			10/14/10 00:00	WTI 1962	
Alkalinity, Total Analysis		**Analytical Method:**	SM20-2320 B					**Analyzed by:** NP		
Alkalinity, Total (as ACO3)	123	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Bicarbonate (as CACO3)	123	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Carbonate (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Hydroxide (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	

Lab ID: K100393002 Date Collected: 9/30/2010 09:44 Matrix: Water
Sample ID: A0J0272-02 W-5 Date Received: 10/8/2010 08:12

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode,Dissolved		**Prep Method:**	EPA 200.8 (filtrate)			**Prep by:** UK				
		Analytical Method:	EPA 200.8 (filtrate)					**Analyzed by:** LM		
Copper	ND	ug/L	0.50	0.060	1	10/13/10 00:00	MPR 9243	10/14/10 17:45	MMS 5675	1
Iron	30	mg/L	0.05	0.0020	1	10/13/10 00:00	MPR 9243	10/14/10 17:45	MMS 5675	
Zinc	1.7	ug/L	1.0	0.80	1	10/13/10 00:00	MPR 9243	10/14/10 17:45	MMS 5675	
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:** MYS		
Sulfate (as SO4)	160	mg/L	10	0.25	25			10/16/10 01:24	WIC 2889	
Hardness, as CACO3 by Titrimetric		**Analytical Method:**	SM20-2340 C					**Analyzed by:** RTE		
Hardness (as CACO3)	180	mg/L	20	8.5	5			10/15/10 00:00	WTI 1963	
Alkalinity, Total Analysis		**Analytical Method:**	SM20-2320 B					**Analyzed by:** NP		
Alkalinity, Total (as CACO3)	41	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Bicarbonate (as CACO3)	41	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Carbonate (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	

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NELAP Accreditation 01103CA

Caltest ANALYTICAL LABORATORY
ENVIRONMENTAL ANALYSES

ELAP Certification 1664

Lab Order: K100393
Project ID A0J0272

ANALYTICAL RESULTS

Lab ID: K100393002 **Date Collected:** 9/30/2010 09:44 **Matrix:** Water
Sample ID: A0J0272-02 W-5 **Date Received:** 10/8/2010 08:12

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Hydroxide (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	

Lab ID: K100393003 **Date Collected:** 9/30/2010 08:35 **Matrix:** Water
Sample ID: A0J0272-03 W-7 **Date Received:** 10/8/2010 08:12

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode,Dissolved		**Prep Method:**	EPA 200.8 (filtrate)			**Prep by:** UK				
		Analytical Method:	EPA 200.8 (filtrate)					**Analyzed by:** LM		
Copper	ND	ug/L	0.50	0.060	1	10/13/10 00:00	MPR 9243	10/14/10 17:50	MMS 5675	1
Iron	J0.008	mg/L	0.05	0.0020	1	10/13/10 00:00	MPR 9243	10/14/10 17:50	MMS 5675	
Zinc	1.9	ug/L	1.0	0.80	1	10/13/10 00:00	MPR 9243	10/14/10 17:50	MMS 5675	
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:** MYS		
Sulfate (as SO4)	J0.093	mg/L	0.5	0.010	1			10/19/10 20:09	WIC 2892	
Hardness, as CACO3 by Titrimetric		**Analytical Method:**	SM20-2340 C					**Analyzed by:** NP		
Hardness (as CACO3)	47	mg/L	5	1.7	1			10/14/10 00:00	WTI 1962	
Alkalinity, Total Analysis		**Analytical Method:**	SM20-2320 B					**Analyzed by:** NP		
Alkalinity, Total (as CACO3)	42	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Bicarbonate (as CACO3)	42	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Carbonate (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Hydroxide (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	

Lab ID: K100393004 **Date Collected:** 9/30/2010 15:10 **Matrix:** Water
Sample ID: A0J0272-04 R-1 **Date Received:** 10/8/2010 08:12

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode,Dissolved		**Prep Method:**	EPA 200.8 (filtrate)			**Prep by:** UK				
		Analytical Method:	EPA 200.8 (filtrate)					**Analyzed by:** LM		
Copper	3.7	ug/L	0.50	0.060	1	10/13/10 00:00	MPR 9243	10/14/10 17:55	MMS 5675	
Iron	0.13	mg/L	0.05	0.0020	1	10/13/10 00:00	MPR 9243	10/14/10 17:55	MMS 5675	
Zinc	1.6	ug/L	1.0	0.80	1	10/13/10 00:00	MPR 9243	10/14/10 17:55	MMS 5675	
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:** MYS		
Sulfate (as SO4)	J0.28	mg/L	0.5	0.010	1			10/19/10 21:12	WIC 2892	

1 10 09:39

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Caltest ANALYTICAL LABORATORY
ENVIRONMENTAL ANALYSES

ELAP Certification 1664

Lab Order: K100393
Project ID A0J0272

ANALYTICAL RESULTS

Lab ID: K100393004
Sample ID: A0J0272-04 R-1
Date Collected: 9/30/2010 15:10
Date Received: 10/8/2010 08:12
Matrix: Water

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Hardness, as CACO3 by Titrimetric		**Analytical Method:**	SM20-2340 C							
Hardness (as CACO3)	72	mg/L	20	8.5	5			**Analyzed by:** NP		
Alkalinity, Total Analysis		**Analytical Method:**	SM20-2320 B					10/15/10 00:00	WTI 1962	
Alkalinity, Total (as CACO3)	78	mg/L	10	1.2	1			**Analyzed by:** NP		
Bicarbonate (as CACO3)	78	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Carbonate (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Hydroxide (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	

Lab ID: K100393005
Sample ID: A0J0272-05 R-3
Date Collected: 9/30/2010 13:50
Date Received: 10/8/2010 08:12
Matrix: Water

arameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode,Dissolved		**Prep Method:**	EPA 200.8 (filtrate)			**Prep by:** UK				
		Analytical Method:	EPA 200.8 (filtrate)					**Analyzed by:** LM		
Copper	J0.34	ug/L	0.50	0.060	1	10/13/10 00:00	MPR 9243	10/14/10 18:01	MMS 5675	
Iron	0.20	mg/L	0.05	0.0020	1	10/13/10 00:00	MPR 9243	10/14/10 18:01	MMS 5675	
Zinc	ND	ug/L	1.0	0.80	1	10/13/10 00:00	MPR 9243	10/14/10 18:01	MMS 5675	
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:** MYS		
Sulfate (as SO4)	J0.079	mg/L	0.5	0.010	1			10/19/10 21:28	WIC 2892	
Hardness, as CACO3 by Titrimetric		**Analytical Method:**	SM20-2340 C							
Hardness (as CACO3)	58	mg/L	5	1.7	1			**Analyzed by:** NP		
Alkalinity, Total Analysis		**Analytical Method:**	SM20-2320 B					10/14/10 00:00	WTI 1962	
Alkalinity, Total (as CACO3)	67	mg/L	10	1.2	1			**Analyzed by:** NP		
Bicarbonate (as CACO3)	67	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Carbonate (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Hydroxide (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	

Lab ID: K100393006
Sample ID: A0J0272-06 R-4
Date Collected: 9/30/2010 12:16
Date Received: 10/8/2010 08:12
Matrix: Water

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual

1 10 09:39

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ANALYTICAL RESULTS

Lab Order: K100393
Project ID A0J0272

Lab ID: K100393006 Date Collected: 9/30/2010 12:16 Matrix: Water
Sample ID: A0J0272-06 R-4 Date Received: 10/8/2010 08:12

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode,Dissolved		**Prep Method:**	EPA 200.8 (filtrate)			**Prep by:** UK				
		Analytical Method:	EPA 200.8 (filtrate)					**Analyzed by:** LM		
Copper	3.1	ug/L	0.50	0.060	1	10/13/10 00:00	MPR 9243	10/14/10 18:06	MMS 5675	
Iron	0.26	mg/L	0.05	0.0020	1	10/13/10 00:00	MPR 9243	10/14/10 18:06	MMS 5675	
Zinc	3.1	ug/L	1.0	0.80	1	10/13/10 00:00	MPR 9243	10/14/10 18:06	MMS 5675	
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:** MYS		
Sulfate (as SO4)	9.6	mg/L	0.5	0.010	1			10/19/10 22:31	WIC 2892	
Hardness, as CACO3 by Titrimetric		**Analytical Method:**	SM20-2340 C					**Analyzed by:** NP		
Hardness (as CACO3)	82	mg/L	5	1.7	1			10/14/10 00:00	WTI 1962	
Alkalinity, Total Analysis		**Analytical Method:**	SM20-2320 B					**Analyzed by:** NP		
Alkalinity, Total (as CACO3)	80	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Bicarbonate (as CACO3)	80	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Carbonate (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Hydroxide (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	

Lab ID: K100393007 Date Collected: 9/30/2010 16:10 Matrix: Water
Sample ID: A0J0272-07 R-5 Date Received: 10/8/2010 08:12

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode,Dissolved		**Prep Method:**	EPA 200.8 (filtrate)			**Prep by:** UK				
		Analytical Method:	EPA 200.8 (filtrate)					**Analyzed by:** LM		
Copper	2.4	ug/L	0.50	0.060	1	10/13/10 00:00	MPR 9243	10/14/10 18:11	MMS 5675	
Iron	0.31	mg/L	0.05	0.0020	1	10/13/10 00:00	MPR 9243	10/14/10 18:11	MMS 5675	
Zinc	1.0	ug/L	1.0	0.80	1	10/13/10 00:00	MPR 9243	10/14/10 18:11	MMS 5675	
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:** MYS		
Sulfate (as SO4)	9.4	mg/L	0.5	0.010	1			10/19/10 22:47	WIC 2892	
Hardness, as CACO3 by Titrimetric		**Analytical Method:**	SM20-2340 C					**Analyzed by:** NP		
Hardness (as CACO3)	67	mg/L	10	3.4	2			10/14/10 00:00	WTI 1962	
Alkalinity, Total Analysis		**Analytical Method:**	SM20-2320 B					**Analyzed by:** NP		
Alkalinity, Total (as CACO3)	79	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Bicarbonate (as CACO3)	79	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Carbonate (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	

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ANALYTICAL RESULTS

Lab Order: K100393
Project ID A0J0272

Lab ID: K100393006 Date Collected: 9/30/2010 12:16 Matrix: Water
Sample ID: A0J0272-06 R-4 Date Received: 10/8/2010 08:12

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode,Dissolved		**Prep Method:**	EPA 200.8 (filtrate)			**Prep by:** UK				
		Analytical Method:	EPA 200.8 (filtrate)					**Analyzed by:** LM		
Copper	3.1	ug/L	0.50	0.060	1	10/13/10 00:00	MPR 9243	10/14/10 18:06	MMS 5675	
Iron	0.26	mg/L	0.05	0.0020	1	10/13/10 00:00	MPR 9243	10/14/10 18:06	MMS 5675	
Zinc	3.1	ug/L	1.0	0.80	1	10/13/10 00:00	MPR 9243	10/14/10 18:06	MMS 5675	
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:** MYS		
Sulfate (as SO4)	9.6	mg/L	0.5	0.010	1			10/19/10 22:31	WIC 2892	
Hardness, as CACO3 by Titrimetric		**Analytical Method:**	SM20-2340 C					**Analyzed by:** NP		
Hardness (as CACO3)	82	mg/L	5	1.7	1			10/14/10 00:00	WTI 1962	
Alkalinity, Total Analysis		**Analytical Method:**	SM20-2320 B					**Analyzed by:** NP		
Alkalinity, Total (as CACO3)	80	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Bicarbonate (as CACO3)	80	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Carbonate (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Hydroxide (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	

Lab ID: K100393007 Date Collected: 9/30/2010 16:10 Matrix: Water
Sample ID: A0J0272-07 R-5 Date Received: 10/8/2010 08:12

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode,Dissolved		**Prep Method:**	EPA 200.8 (filtrate)			**Prep by:** UK				
		Analytical Method:	EPA 200.8 (filtrate)					**Analyzed by:** LM		
Copper	2.4	ug/L	0.50	0.060	1	10/13/10 00:00	MPR 9243	10/14/10 18:11	MMS 5675	
Iron	0.31	mg/L	0.05	0.0020	1	10/13/10 00:00	MPR 9243	10/14/10 18:11	MMS 5675	
Zinc	1.0	ug/L	1.0	0.80	1	10/13/10 00:00	MPR 9243	10/14/10 18:11	MMS 5675	
Anions by Ion Chromatography		**Analytical Method:**	EPA 300.0					**Analyzed by:** MYS		
Sulfate (as SO4)	9.4	mg/L	0.5	0.010	1			10/19/10 22:47	WIC 2892	
Hardness, as CACO3 by Titrimetric		**Analytical Method:**	SM20-2340 C					**Analyzed by:** NP		
Hardness (as CACO3)	67	mg/L	10	3.4	2			10/14/10 00:00	WTI 1962	
Alkalinity, Total Analysis		**Analytical Method:**	SM20-2320 B					**Analyzed by:** NP		
Alkalinity, Total (as CACO3)	79	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Bicarbonate (as CACO3)	79	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	
Carbonate (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	

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ANALYTICAL RESULTS

Lab Order: K100393
Project ID A0J0272

Lab ID:	**K100393007**	Date Collected:	9/30/2010 16:10	Matrix:	Water
Sample ID:	**A0J0272-07 R-5**	Date Received:	10/8/2010 08:12		

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Hydroxide (as CACO3)	ND	mg/L	10	1.2	1			10/12/10 11:48	WTI 1961	

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QUALITY CONTROL DATA

Lab Order: K100393
Project ID: A0J0272

Analysis Description:	Metals by ICPMS Collision Mode,Dissolved	**QC Batch:**	MPR/9243
Analysis Method:	EPA 200.8 (filtrate)	**QC Batch Method:**	EPA 200.8 (filtrate)

METHOD BLANK: 355720

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Copper	ND	0.50	0.06	ug/L	
Iron	ND	50	2.0	ug/L	
Zinc	ND	1.0	0.8	ug/L	

LABORATORY CONTROL SAMPLE: 355721

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	20	19	95	85-115	
Iron	ug/L	10000	9830	98	85-115	
Zinc	ug/L	20	19	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 355722 355723

Parameter	Units	K100385001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Copper	ug/L	0.9	20	18	18	87	87	85-115	0.1	20	
Iron	ug/L	32	10000	9190	9130	92	91	85-115	0.7	20	
Zinc	ug/L	0.8	20	18	19	87	89	85-115	2.5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 355725 355726

Parameter	Units	K100447001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Copper	ug/L	10	20	27	27	83	83	85-115	0.3	20	2
Iron	ug/L	14	10000	9080	9080	91	91	85-115	0.1	20	
Zinc	ug/L	15	20	30	30	76	77	85-115	0.5	20	2

Analysis Description:	Anions by Ion Chromatography	**QC Batch:**	WIC/2889
Analysis Method:	EPA 300.0	**QC Batch Method:**	EPA 300.0

METHOD BLANK: 356576

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Sulfate (as SO4)	ND	0.5	0.01	mg/L	

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QUALITY CONTROL DATA

Lab Order: K100393
Project ID: A0J0272

Analysis Description:	Anions by Ion Chromatography	**QC Batch:**	WIC/2889
Analysis Method:	EPA 300.0	**QC Batch Method:**	EPA 300.0

LABORATORY CONTROL SAMPLE: 356577

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate (as SO4)	mg/L	10	9.4	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 356578 356579

Parameter	Units	K100701003 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Sulfate (as SO4)	mg/L	31	16	48	48	106	103	90-110	1.2	20	

Analysis Description:	Anions by Ion Chromatography	**QC Batch:**	WIC/2892
Analysis Method:	EPA 300.0	**QC Batch Method:**	EPA 300.0

METHOD BLANK: 357187

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Sulfate (as SO4)	J0.036	0.5	0.01	mg/L	

LABORATORY CONTROL SAMPLE: 357188

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate (as SO4)	mg/L	10	9.6	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 357189 357190

Parameter	Units	K100393003 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Sulfate (as SO4)	mg/L	0.093	16	16	16	98	97	90-110	0.9	20	

Analysis Description:	Alkalinity, Total Analysis	**QC Batch:**	WTI/1961
Analysis Method:	SM20-2320 B	**QC Batch Method:**	SM20-2320 B

METHOD BLANK: 355366

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QUALITY CONTROL DATA

Lab Order: K100393

Project ID: A0J0272

Analysis Description:	Alkalinity, Total Analysis	**QC Batch:**	WTI/1961
Analysis Method:	SM20-2320 B	**QC Batch Method:**	SM20-2320 B

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Alkalinity, Total (as CACO3)	ND	10	1	mg/L	
Bicarbonate (as CACO3)	ND	10	1	mg/L	
Carbonate (as CACO3)	ND	10	1.2	mg/L	
Hydroxide (as CACO3)	ND	10	1	mg/L	

LABORATORY CONTROL SAMPLE: 355367

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total (as CACO3)	mg/L	100	102	102	80-120	
Bicarbonate (as CACO3)	mg/L	100	102	102	80-120	

SAMPLE DUPLICATE: 355368

Parameter	Units	K100393001 Result	DUP Result	RPD	Max RPD	Qualifiers
Alkalinity, Total (as CACO3)	mg/L	123	123	0.2	20	
Bicarbonate (as CACO3)	mg/L	123	123	0.2	20	
Carbonate (as CACO3)	mg/L	0	0	0	20	
Hydroxide (as CACO3)	mg/L	0	0	0	20	

Analysis Description:	Hardness, as CACO3 by Titrimetric	**QC Batch:**	WTI/1962
Analysis Method:	SM20-2340 C	**QC Batch Method:**	SM20-2340 C

METHOD BLANK: 355921

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Hardness (as CACO3)	J4.7	5	2	mg/L	

LABORATORY CONTROL SAMPLE: 355922

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Hardness (as CACO3)	mg/L	100	100	100	80-120	

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QUALITY CONTROL DATA

Lab Order: K100393

Project ID: A0J0272

Analysis Description:	Hardness, as CACO3 by Titrimetric	**QC Batch:**	WTI/1962
Analysis Method:	SM20-2340 C	**QC Batch Method:**	SM20-2340 C

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 355923 355924

Parameter	Units	K100394003 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Hardness (as CACO3)	mg/L	430	500	870	800	88	74	80-120	8.7	20	2

Analysis Description:	Hardness, as CACO3 by Titrimetric	**QC Batch:**	WTI/1963
Analysis Method:	SM20-2340 C	**QC Batch Method:**	SM20-2340 C

METHOD BLANK: 356449

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Hardness (as CACO3)	ND	5	2	mg/L	

LABORATORY CONTROL SAMPLE: 356450

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Hardness (as CACO3)	mg/L	1000	1000	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 356451 356452

Parameter	Units	K100446001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Hardness (as CACO3)	mg/L	90	100	190	190	98	98	80-120	0	20	

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QUALITY CONTROL DATA

Lab Order: K100393

Project ID: A0J0272

Analysis Description:	Hardness, as CACO3 by Titrimetric	**QC Batch:**	WTI/1962
Analysis Method:	SM20-2340 C	**QC Batch Method:**	SM20-2340 C

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 355923 355924

Parameter	Units	K100394003 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Hardness (as CACO3)	mg/L	430	500	870	800	88	74	80-120	8.7	20	2

Analysis Description:	Hardness, as CACO3 by Titrimetric	**QC Batch:**	WTI/1963
Analysis Method:	SM20-2340 C	**QC Batch Method:**	SM20-2340 C

METHOD BLANK: 356449

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Hardness (as CACO3)	ND	5	2	mg/L	

LABORATORY CONTROL SAMPLE: 356450

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Hardness (as CACO3)	mg/L	1000	1000	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 356451 356452

Parameter	Units	K100446001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Hardness (as CACO3)	mg/L	90	100	190	190	98	98	80-120	0	20	

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QUALITY CONTROL DATA QUALIFIERS

Lab Order: K100393

Project ID: A0J0272

QUALITY CONTROL PARAMETER QUALIFIERS

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

NS - means not spiked and will not have recoveries reported for Analyte Spike Amounts

NC - means not able to be calculated for RPD or Spike Recoveries.

QC Codes Keys: These descriptors are used to help identify the specific QC samples and clarify the report.

MB - Method Blank

Method Blanks are reported to the same Method Detection Limits (MDLs) or Reporting Limits (RLs) as the analytical samples in the corresponding QC batch.

LCS/LCSD - Laboratory Control Spike / Laboratory Control Spike Duplicate

DUP - Duplicate of Original Sample Matrix

MS/MSD - Matrix Spike / Matrix Spike Duplicate

RPD - Relative Percent Difference

%Recovery - Spike Recovery stated as a percentage

2 Low Matrix Spike recovery(ies) due to possible matrix interferences in the QC sample. QC batch accepted based on LCS and RPD results.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab Order: K100393
Project ID: A0J0272

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
K100393001	A0J0272-01 W-3	EPA 200.8 (filtrate)	MPR/9243	EPA 200.8 (filtrate)	MMS/5675
K100393002	A0J0272-02 W-5	EPA 200.8 (filtrate)	MPR/9243	EPA 200.8 (filtrate)	MMS/5675
K100393003	A0J0272-03 W-7	EPA 200.8 (filtrate)	MPR/9243	EPA 200.8 (filtrate)	MMS/5675
K100393004	A0J0272-04 R-1	EPA 200.8 (filtrate)	MPR/9243	EPA 200.8 (filtrate)	MMS/5675
K100393005	A0J0272-05 R-3	EPA 200.8 (filtrate)	MPR/9243	EPA 200.8 (filtrate)	MMS/5675
K100393006	A0J0272-06 R-4	EPA 200.8 (filtrate)	MPR/9243	EPA 200.8 (filtrate)	MMS/5675
K100393007	A0J0272-07 R-5	EPA 200.8 (filtrate)	MPR/9243	EPA 200.8 (filtrate)	MMS/5675
K100393001	A0J0272-01 W-3	EPA 300.0	WIC/2889		
K100393002	A0J0272-02 W-5	EPA 300.0	WIC/2889		
K100393003	A0J0272-03 W-7	EPA 300.0	WIC/2892		
K100393004	A0J0272-04 R-1	EPA 300.0	WIC/2892		
K100393005	A0J0272-05 R-3	EPA 300.0	WIC/2892		
K100393006	A0J0272-06 R-4	EPA 300.0	WIC/2892		
K100393007	A0J0272-07 R-5	EPA 300.0	WIC/2892		
K100393001	A0J0272-01 W-3	SM20-2320 B	WTI/1961		
K100393002	A0J0272-02 W-5	SM20-2320 B	WTI/1961		
K100393003	A0J0272-03 W-7	SM20-2320 B	WTI/1961		
K100393004	A0J0272-04 R-1	SM20-2320 B	WTI/1961		
K100393005	A0J0272-05 R-3	SM20-2320 B	WTI/1961		
K100393006	A0J0272-06 R-4	SM20-2320 B	WTI/1961		
K100393007	A0J0272-07 R-5	SM20-2320 B	WTI/1961		
K100393001	A0J0272-01 W-3	SM20-2340 C	WTI/1962		
K100393003	A0J0272-03 W-7	SM20-2340 C	WTI/1962		
K100393004	A0J0272-04 R-1	SM20-2340 C	WTI/1962		
K100393005	A0J0272-05 R-3	SM20-2340 C	WTI/1962		
K100393006	A0J0272-06 R-4	SM20-2340 C	WTI/1962		
K100393007	A0J0272-07 R-5	SM20-2340 C	WTI/1962		
K100393002	A0J0272-02 W-5	SM20-2340 C	WTI/1963		

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BSK Analytical Laboratories
Engineering Laboratories

SUBCONTRACT ORDER

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Napa, CA 94558
Phone :(707) 258-4000
Fax: (707) 226-1001
Turnaround (Days): Standard
QC Deliverables: I Std III IV

Sample ID	Samp Desc	Comments	Sample Date
A0J0272-01	W-3		09/30/2010 11:10
Matrix: Water	Analysis: 1 L P w/ 100mL 250 mL P w/ HNO3		
	EXT-Miscellaneous	LL testing: SO4, ALK, Hard, FE, Cu, Zn	
A0J0272-02	W-5		09/30/2010 09:44
Matrix: Water	"	" field filtered + preserved	
	Analysis		
	EXT-Miscellaneous	LL testing: SO4, ALK, Hard, FE, Cu, Zn	
A0J0272-03	W-7		09/30/2010 08:35
Matrix: Water	"	" field filtered + preserved	
	Analysis		
	EXT-Miscellaneous	LL testing: SO4, ALK, Hard, FE, Cu, Zn	
A0J0272-04	R-1		09/30/2010 15:10
Matrix: Water	"	" field filtered + pres.	
	Analysis		
	EXT-Miscellaneous	LL testing: SO4, ALK, Hard, FE, Cu, Zn	
A0J0272-05	R-3		09/30/2010 13:50
Matrix: Water	"	" field filtered + pres	
	Analysis		
	EXT-Miscellaneous	LL testing: SO4, ALK, Hard, FE, Cu, Zn	
A0J0272-06	R-4		09/30/2010 12:16
Matrix: Water	"	" field filtered + pres.	
	Analysis		
	EXT-Miscellaneous	LL testing: SO4, ALK, Hard, FE, Cu, Zn	
A0J0272-07	R-5		09/30/2010 16:10
Matrix: Water	"	" field filtered + pres	
	Analysis		
	EXT-Miscellaneous	LL testing: SO4, ALK, Hard, FE, Cu, Zn	
		field filtered + preserved	

Released By: [signature] Date: Payal Harra 10/7/10 Received By: [signature] Date: 10/8/10 0812 Temp 3.4°C

Released By Date Received By Date